

LEGUMINOSAE OF MEXICO — FABOIDEAE

I. SOPHOREAE AND PODALYRIEAE

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INTRODUCTION

The Leguminosae, or Fabaceae, is one of the largest and most important families of flowering plants. In Mexico, where corn and beans, tortillas and frijoles, have long been staples of diet, the legume family probably ranks second only after the grass family in importance to the basic economy.

Of a worldwide total of about 600 genera of Leguminosae, slightly over 100 are native to Mexico. Approximately another 20 to 30 genera have been introduced, many of which have been naturalized. The figures are somewhat larger if one recognizes the many segregate genera such as have been ascribed to *Acacia*, *Pithecellobium*, and *Astragalus*.

The leguminous genera known to occur in Mexico include not only beans but other edible seeds, fruits, and vegetative parts utilized as food for man and animals. Many trees provide economic products such as lumber, resins, and pharmaceuticals; some are cultivated as ornamentals.

Early reports of the natural history of Mexico mention leguminous plants utilized by the Indians, especially for medicinal purposes. Oviedo¹, writing in 1526, mentioned that many kinds of beans, "fesoles", were gathered in great abundance, especially in "Nueva España é Nicaragua", some with yellow seeds, others spotted, "pintados de pecas." The Badianus manuscript, an Aztec herbal of 1552², includes colored illustrations of several legumes appearing to be species of *Calliandra*, *Mimosa*, *Haematoxylon*, and *Phaseolus*. White incense, possibly from *Myroxylon*, is mentioned in the text. Hernandez' report on the plants of

¹Fernández de Oviedo y Valdéz, Gonzalo. *História general y natural de las Indias*. Madrid, 1851-1855.

²Cruz, Martín de la, and Juan Badianus. English translation by Emily Walcott Emmart. *The Badianus manuscript — an Aztec herbal*. 1940.

Mexico, written in 1570-1575³, includes a great many legumes, some clearly recognizable, others dubiously so. From an illustration, as well as the text, "hoitziloxitl", the "bálsamo de indias", is without doubt identifiable as *Myroxylon*.

Taxonomic works, such as those of Linnaeus, Willdenow, Miller, Kunth, DeCandolle, and Bentham, included descriptions of new Mexican Leguminosae based on early collections, especially those of Houstoun, Humboldt and Bonpland, Sessé and Mociño. They will be cited in the following taxonomic text.

In 1880 Hemsley⁴ listed the legumes of Mexico and Central America as completely as then known from the herbarium material at Kew. Unfortunately, although collections were cited, descriptions were given only for new species; and there are no keys. The woody species of legumes were included in Standley's *Trees and Shrubs of Mexico*⁵, but this treatment is long out of date. There never has been a complete treatment of the herbaceous species.

For the "North American Flora" the Mimosoideae, as Mimosaceae⁶, and the Caesalpinioideae, as Caesalpinaceae⁷, were revised by Britton and Rose, and the Faboideae, as Fabaceae⁸, were presented, in part, by various authors, chiefly Rydberg.

Perusal of Langman's tremendous bibliography⁹ will indicate how much has been published on the Mexican flora and vegetation. Nevertheless, there is no adequate treat-

³Hernández, Francisco. Spanish translation by José Rojo Navarro. *História de las plantas de Nueva España*. Mexico, 1942-1946.

⁴Hemsley, W. B. in Godman and Salvin. *Biologia Centrali-americana*. Botany 1: 225-364. 1880.

⁵Standley, P. C. *Trees and Shrubs of Mexico*. Contributions from the U. S. National Herbarium 23: 348-515. 1922; appendix 1657-1667. 1926.

⁶Britton, N. L. and J. N. Rose. *North American Flora* 23: 1-194. 1928.

⁷Britton, N. L. and J. N. Rose. *North American Flora* 23: 201-349. 1930.

⁸Rydberg, P. A. *North American Flora* 24: 1-462. 1919-1929.

⁹Langman, I. K. *A selected guide to the literature on the flowering plants of Mexico*. 1964.

ment for general determination of Mexican legumes, especially the faboid genera.

In the preparation of this synopsis of the Leguminosae of Mexico, many general works have been consulted, including the *Genera Plantarum* of Bentham and Hooker¹⁰, Taubert's treatment of the Leguminosae for *Die Natürlichen Pflanzenfamilien*¹¹ and the supplement by Harms¹², *The Genera of Flowering Plants* by Hutchinson¹³, and the *Index Nominum Genericorum*¹⁴. For economic uses, the works of Martínez, *Las Plantas Medicinales de México*¹⁵ and *Plantas Útiles de la Flora Mexicana*¹⁶, and *Timbers of the New World* by Record and Hess¹⁷ have been important sources of information. Burkart's *Las Leguminosas Argentinas*¹⁸ has been especially valuable. Also helpful have been such floristic works as the *Flora of Yucatan* by Standley¹⁹, the *Flora of Guatemala* by Standley and Steyermark²⁰, *Legumes of Texas* by Turner²¹, *Arizona Flora* by Kearney and Peebles²², and the *Vegetation and Flora of the Sonoran Desert*, by Shreve and Wiggins²³.

¹⁰Bentham, G. and J. D. Hooker. *Genera Plantarum* 1: 434-600. 1865.

¹¹Taubert, P. in Engler and Prantl. *Die Natürlichen Pflanzenfamilien* III, 3: 70-388. 1891-1894.

¹²Harms, H. in Engler and Prantl. *Die Natürlichen Pflanzenfamilien* III, 3. Nachträge 2: 30-34, 190-203. 1900.

¹³Hutchinson, J. *The genera of flowering plants* 1: 221-489. 1964.

¹⁴*Index Nominum Genericorum*. International Association for Plant Taxonomy. Utrecht. 1954 —

¹⁵Martínez, M. *Las plantas medicinales de México*, ed. 4. 1959.

¹⁶Martínez, M. *Plantas útiles de la flora mexicana*. 1959.

¹⁷Record, S. J. and R. W. Hess. *Timbers of the New World*. 1943.

¹⁸Burkart, A. *Las leguminosas argentinas*, ed. 2. 1952.

¹⁹Standley, P. C. *Flora of Yucatan*. *Field Museum of Natural History, botanical series* 3: 157-492. 1930.

²⁰Standley, P. C. and J. A. Steyermark. *Flora of Guatemala*. *Fieldiana: Botany* 24(5): 1-368. 1946.

²¹Turner, B. L. *The legumes of Texas*. 1959.

²²Kearney, T. H. and R. H. Peebles. *Arizona flora*, 395-484. 1960.

²³Shreve, F. and I. L. Wiggins. *Vegetation and flora of the Sonoran desert* 1: 585-731. 1964.

As indicated in the key, I am treating the Leguminosae as one large family subdivided into three subfamilies, the Mimosoideae, the Caesalpinioideae, and the Faboideae, the latter also known as the Papilionoideae and the Lotoideae. In this study the Faboideae will be presented first for more or less arbitrary reasons, principally, because this subfamily was only partly treated in "The North American Flora" mentioned above.

My interpretation is generally conservative, with the genera arranged in the Dalla Torre and Harms²⁴ sequence, and ten tribes, essentially as delimited by Bentham, and followed by Taubert and others. I believe that Hutchinson's separation of the "Fabaceae" into 50 tribes is unduly divisive. Perhaps, a system somewhat intermediate between Bentham's and Hutchinson's can be developed, but, for purposes of an introductory key to tribes in this paper, the former will be followed.

At the suggestion of the late Dr. Faustino Miranda I am attempting to provide fairly full descriptions, synonymy, and citations of material studied. To avoid unnecessary bulk, however, I am excluding citations of Old World synonymy unless pertinent to Mexican taxa. Relevant monographic works will be cited under the genera, but the authors' interpretations will not necessarily be followed.

This work is based chiefly on herbarium material, as indicated by the citations. The abbreviations of herbarium names are those of Lanjouw and Stafleu²⁵. I am grateful to the curators of those many institutions for making their specimens available to me.

The citations of "F.M.Neg." refer to Field Museum negatives of a series of photographs taken in European herbaria by J. F. Macbride during 1929 to 1939.

²⁴Dalla Torre, C. G. and H. Harms. *Genera siphonogamarum*. 1900-1907.

²⁵Lanjouw, J. and F. A. Stafleu. *Index herbariorum I. The herbaria of the world*, ed. 5. 1964.

SYSTEMATIC TREATMENT

Leguminosae: Legume or bean family

Leguminosae Juss. Gen. 345. 1789, nom. cons. TYPE: *Faba* Mill.
(= *Vicia* L. p.p.)

Fabaceae Lindl. Nat. Syst. ed. 2, 148. 1836, nom. alt. TYPE: *Faba*
Mill. (= *Vicia* L. p.p.)

Trees, shrubs, or herbs, the stems sometimes twining; leaves commonly alternate, rarely opposite, compound, sometimes simple, usually stipulate, sometimes stipellate; flowers commonly bisexual, 5-merous, solitary or in compound inflorescences, axillary or terminal; sepals free or united, 4 or 5, rarely 1, then spathaceous; petals free or united, 5, sometimes fewer or lacking; stamens commonly 5-∞, sometimes reduced to only 1 fertile member, the sterile members may be present or sometimes reduced to staminodes, the filaments free or united, the anthers 2-celled, dehiscing lengthwise or by terminal pores; pistil usually 1, the ovary superior, 1-locular, 1-∞ ovulate; fruit a legume, dehiscent or indehiscent, 1-many-seeded, 2-valved, but may be modified as a drupe, samara, follicle, or loment; seed commonly with a coriaceous testa, reniform, lenticular, or spherical, sometimes alate, sometimes arillate, the hilum orbicular to linear, sometimes circumscribed, the endosperm little or none.

Distribution: Worldwide.

KEY TO SUBFAMILIES OF LEGUMINOSAE

- Flowers actinomorphic, radiate and regular; corolla and calyx valvate in bud (except calyx imbricate in Parkieae); stamens 4-∞; leaves commonly bipinnate, sometimes pinnate or reduced to phyllodes Mimosoideae
- Flowers generally zygomorphic, sometimes subactinomorphic; corolla and calyx imbricate in bud or, sometimes, valvate.
- Uppermost (adaxial) petal enveloped by the other petals in bud; stamens (fertile) 1-∞, commonly 10 or fewer; leaves usually pinnate, sometimes bipinnate, rarely simple Caesalpinioideae
- Uppermost (adaxial) petal exterior in bud, enveloping the other petals; stamens 10, rarely fewer; leaves simple or pinnate, never bipinnate Faboideae

Leguminosae subfamily FABOIDEAE

Leguminosae subfam. Faboideae.²⁶ TYPE: *Faba* Mill. (= *Vicia* L. p.p.)

Papilionaceae Giseke, Praelect. Ord. Nat. Pl. 415. 1792.

Fabaceae H. G. L. Reichenbach, Consp. Regni Veg. 149. 1828.

²⁶The use of "Faboideae," based on Fabaceae, agrees with article 19 of the International Code of Botanical Nomenclature, 1966.

Leguminosae fam. *Papilionatae* A. Braun in Ascherson, Fl. Prov. Brandenb. Einleitung 67. 1864.

Leguminosae subfam. *Papilionoideae* Robinson & Fernald, Gray's New Man. Bot. ed. 7, 500. 1908.

Papilionaceae subfam. *Lotoideae* Luerksen, Grundzüge Bot. 379. 1877. Type: *Lotus* L.

Leguminosae subfam. *Lotoideae* (Luerksen) Rehder, Journ. Arn. Arb. 26: 477. 1945.

Characters those of the family except as noted in the key to subfamilies, viz., leaves never bipinnate; flowers with adaxial petal exterior in the bud, enveloping the other petals, if present; stamens commonly 10, rarely fewer.

The taxa not typified above presumably were based on *Faba* Mill.

KEY TO TRIBES OF SUBFAMILY FABOIDEAE IN MEXICO

- a.* Flowers with stamens distinct, the filaments separate to the base. *b.*
b. Leaves pinnately 5- many-foliolate. 1. SOPHOREAE
b. Leaves digitately 1-3-foliolate. 2. PODALYRIEAE
a. Flowers with stamens united, all or most of the filaments joined, at least in part, monadelphous or diadelphous. *c.*
c. Legumes commonly indehiscent, drupes, samaras, or loment, sometimes compressed, nonalate, usually more than 1 cm. long. *d.*
d. Fruits articulated, the joints usually separating at maturity; stamens monadelphous or diadelphous 5:5 or 9:1. 7. HEDYSAREAE
d. Fruits mostly drupaceous or samaroid, sometimes compressed, nonalate; stamens commonly monadelphous, the vexillar filament sometimes separating from the others 8. DALBERGIEAE
c. Legumes 2-valved, usually dehiscent or, if indehiscent, small, but a few mm. long. *e.*
e. Leaves digitate. *f.*
f. Leaflets serrate or denticulate; leaves commonly 3-foliolate, rarely more or less; stamens diadelphous 9:1. .. 4. TRIFOLIEAE
f. Leaflets entire; leaves 1-many-foliolate; stamens monadelphous or diadelphous. *g.*
g. Stamens monadelphous, the filaments uniform in width, forming a closed tube or open sheath, the anthers dimorphic, alternately basifixed and dorsifixed. 3. GENISTEAE
g. Stamens diadelphous, the vexillar stamen free, the others united, alternate filaments commonly broadened at the apex, the anthers uniform. 5. LOTEAE
e. Leaves pinnate. *h.*
h. Leaf rachis terminating in a tendril or bristle; leaves even-pinnate; stamens 9, monadelphous, or 10, diadelphous 9:1. .. 9. VICIEAE

- h.* Leaf rachis usually with a terminal leaflet, without tendrils or bristles; leaves mostly odd-pinnate; stamens mostly diadelphous 9:1, sometimes pseudomonadelphous with the vexillar filaments partially adherent to the adjacent filaments (Galegeae). *i.*
- i.* Leaflets serrate or denticulate. 4. TRIFOLIEAE
- i.* Leaflets entire or sometimes dentate or lobate (Phaseoleae). *j.*
- j.* Flowers in umbels, loosely capitate, or solitary in the axils; stamens with filaments commonly broadened at the apex; anthers uniform. 5. LOTEAE
- j.* Flowers in racemes, panicles, or spikes; stamens with filaments essentially uniform in width; anthers uniform or sometimes dimorphic. *k.*
- k.* Leaves commonly with 5 or more leaflets, estipellate. 6. GALEGEAE
- k.* Leaves commonly 3-foliolate or sometimes with 1, 5, or 7 leaflets, usually stipellate. 10. PHASEOLEAE

Tribe 1. SOPHOREAE

Sophoreae Spreng. Anleit. 2, 2: 741. 1818. Type: *Sophora* L.

Trees, shrubs, or herbs, sometimes climbing; leaves pinnately 1-many-foliolate; stipules present or absent; stipels rarely present; inflorescences racemose or paniculate; flowers with the corolla zygomorphic or subactinomorphic; calyx valvate or imbricate in bud; petals free or with the keel petals joined; stamens 10 or fewer, the filaments separate to the base, equal or alternately subequal in length, the anthers essentially uniform, dorsifixed, oblong to ellipsoid; ovary 1-many-ovulate, the style glabrous, at least toward the apex; fruit 2-valved, dehiscent or indehiscent, sometimes samaroid; seed with hilum apical, lateral, or, rarely, circumcinct.

KEY TO MEXICAN GENERA OF SOPHOREAE

- a.* Leaflets with resinous, pellucid lines and dots; fruit elongate-samaroid, 1-seeded at apex. *b.*
- b.* Anthers oblong, about 4-4.5 mm. long; leaves 7-11-foliolate; leaflets mostly ovate, acute, or acuminate; ovary glabrous. 2. MYROXYLON
- b.* Anthers elliptic, about 1 mm. long; leaves 11-23-foliolate; leaflets mostly oblong, obtuse; ovary pubescent, at least at the base. 3. MYROSPERMUM
- a.* Leaflets lacking pellucid lines but sometimes with minute punctae; fruit 1-15-seeded, not elongate-samaroid as above. *c.*
- c.* Fruit about 5 mm. thick or less, the valves thinly coriaceous, usually somewhat marginate or alate; flowers not papilionaceous. *d.*

- d. Flowers with 5 subequal petals; ovary with filiform style, the stigma minutely capitate-penicillate; fruit about 5-9 cm. long. 1. SWEETIA
- d. Flowers with 1 petal; ovary with sessile, peltate stigma; fruit semiorbicular, about 4 cm. long or less. 4. ATELEIA
- c. Fruit about 5-20 mm. thick, the valves coriaceous or lignous, not alate; flowers papilionaceous with 5 petals. e.
- e. Standard petal pubescent on the outer face; fruit orange- or fulvo-velutinous, usually brownish when dry, the valves enrolled after dehiscence; seeds elliptic or cylindrical, red, darkening when dry, the hilum subapical; leaflets with tertiary veins scalariform; lateral leaflets alternate to subopposite. 5. DUSSIA
- e. Standard petal glabrous on the outer face; fruit glabrous or pubescent, the valves not distorted after dehiscence; seeds subglobose, the hilum apical; leaflets with tertiary veins mostly reticulate, the lateral leaflets essentially opposite. f.
- f. Flowers with curved style, the stigma bilobed, lateral; fruit compressed, somewhat constricted between the seeds but not moniliform; seeds red or bicolored red and black. 6. ORMOSIA
- f. Flowers with style essentially straight, the stigma minutely capitate-penicillate, terminal; fruit terete or nearly so, torulose or moniliform; seeds red, brownish, or yellowish. 7. SOPHORA

1. SWEETIA Spreng.

Sweetia Spreng. in L. Syst. Veg. 2: 171, 213. 1825, nom. conserv., non DC. 1825. TYPE: *S. fruticosa* Spreng. Brazil.

Acosmium Schott in Spreng. in L. Syst. Veg. 4, Append.: 406. 1827. TYPE: *A. lentiscifolium* Schott in Spreng. Brazil.

Leptolobium Vog. Linnaea 11: 388. [Feb.] 1837, non Benth. [June] 1837, 1838. Lectotype: *L. dasycarpa* Vog. (Mohlenbrock, Webbia 17: 233. 1963). Brazil.

Thalesia Mart. ex Pfeiffer, Nom. 2(2): 1384. 1874, nom. nud. based on *Leptolobium* Vog.; non Raf. 1818, nom. nud.

Reference: R. H. Mohlenbrock, Webbia 17: 223-263. 1963.

Trees, unarmed; leaves alternate, imparipinnate, commonly 5-21-foliolate, the leaflets alternate; stipules and stipels minute or lacking; inflorescences axillary or terminal, racemose or paniculate; flowers small; calyx turbinate-campanulate with 5 subequal lobes, valvate or subimbricate in bud; corolla with 5 free, subequal, whitish petals; stamens 10, rarely 5, the filaments free, subequal, the anthers uniform, ellipsoid, dorsifixed; stigma terminal; fruit indehiscent com-

pressed 1-4-seeded; seeds brown or reddish brown, elliptic to ovate, compressed, the hilum apical, elliptic.

About 20 species, chiefly in South America.

1. *Sweetia panamensis* Benth. Jour. Linn. Soc. Bot. 8: 263. 1865.
 TYPE: *S. Hays 267*, Panamá [Canal Zone]. Figure 1.
Dalbergia laevigata Standl. Trop. Woods 12: 5. 1927. TYPE: *S. J. Record s.n.*, British Honduras.

Tree, to about 40 m. tall; leaves 5-15-foliolate, the axis about 8-20 cm. long, puberulent or subglabrous, the lateral leaflets alternate, the blades coriaceous or subcoriaceous, ovate to ovate-oblong, about 2-9.5 cm. long, 1-4 cm. broad, the apex obtuse or acute, retuse, the base rounded, the upper surface nitid, glabrous, the lower surface moderately pubescent, glabrate, the secondary venation inconspicuous, the tertiary venation reticulate, the terminal leaflet sometimes larger than the laterals; inflorescences with axes moderately pubescent, the bracts and bracteoles linear, 1-3 mm. long; flowers about 6 mm. long, fragrant; calyx moderately pubescent to subglabrous, 3-4 mm. long, the lobes and tube about equal in length; corolla white or cream-colored, the petals glabrous, subequal, spatulate, emarginate, clawed; stamens 10, with the filaments about as long as the petals or slightly longer, the anthers less than 1 mm. long; ovary sparsely pubescent to glabrous, the style glabrous or subglabrous, the stigma terminal, minutely capitate-penicillate; fruit indehiscent, coriaceous, light brown or stramineous, glabrous at maturity, reticulate, compressed, 1-3-seeded, oblong or elliptic, the ends acute to obtuse, about 5-9 cm. long, (1.5-) 2-2.5 cm. broad, about 5 mm. thick at the seeds, otherwise less than 1 mm. thick; seeds lustrous, subovate, about 8 mm. long, 6 mm. broad, and 2-3 mm. thick, the hilum about 1 mm. long.

Distribution: In moist forest up to about 800 meters elevation, southern México to northern Colombia and northwestern Venezuela.

MEXICO: VERACRUZ: Campo Experimental de Hule, El Palmar, Zongolica, *Vera-Santos 3264* (MICH). Minatitlan, *Saenz s.n.* (MICH). Near Cordoba, *Froehling s.n.* (MICH).

GUERRERO: La Parota, *Langlassé 383* (GH, K, MEXU, P, US). Agua de Correa, Jimalcota, *Langlassé 685* (GH, K, P, US).

OAXACA: Tuxtepec, *Miranda 4153* (MEXU, US); *Gómez-Pompa 1264* (MEXU); *Sousa 251* (MEXU). Tuxtepec, El Naranjal, *Miranda 4297* (MEXU, US). Tuxtepec, Chiltepec, *Martínez-Calderón 62* (GH, MEXU, UC, US), *564* (MEXU, UC, US). Santa María de Chimalapa, *Mell s.n.* (US). "Matilde, Valle Usmacín," *Reko 4095* (US). Ubero, *Ll. Wil-*

liams 9165 (DS, F, P, UC) [same collection? but locality as Fortuño, Veracruz (A)].

CHIAPAS: Cacaluta, Escuintla, *Matuda 16587* (MEXU), *16663*

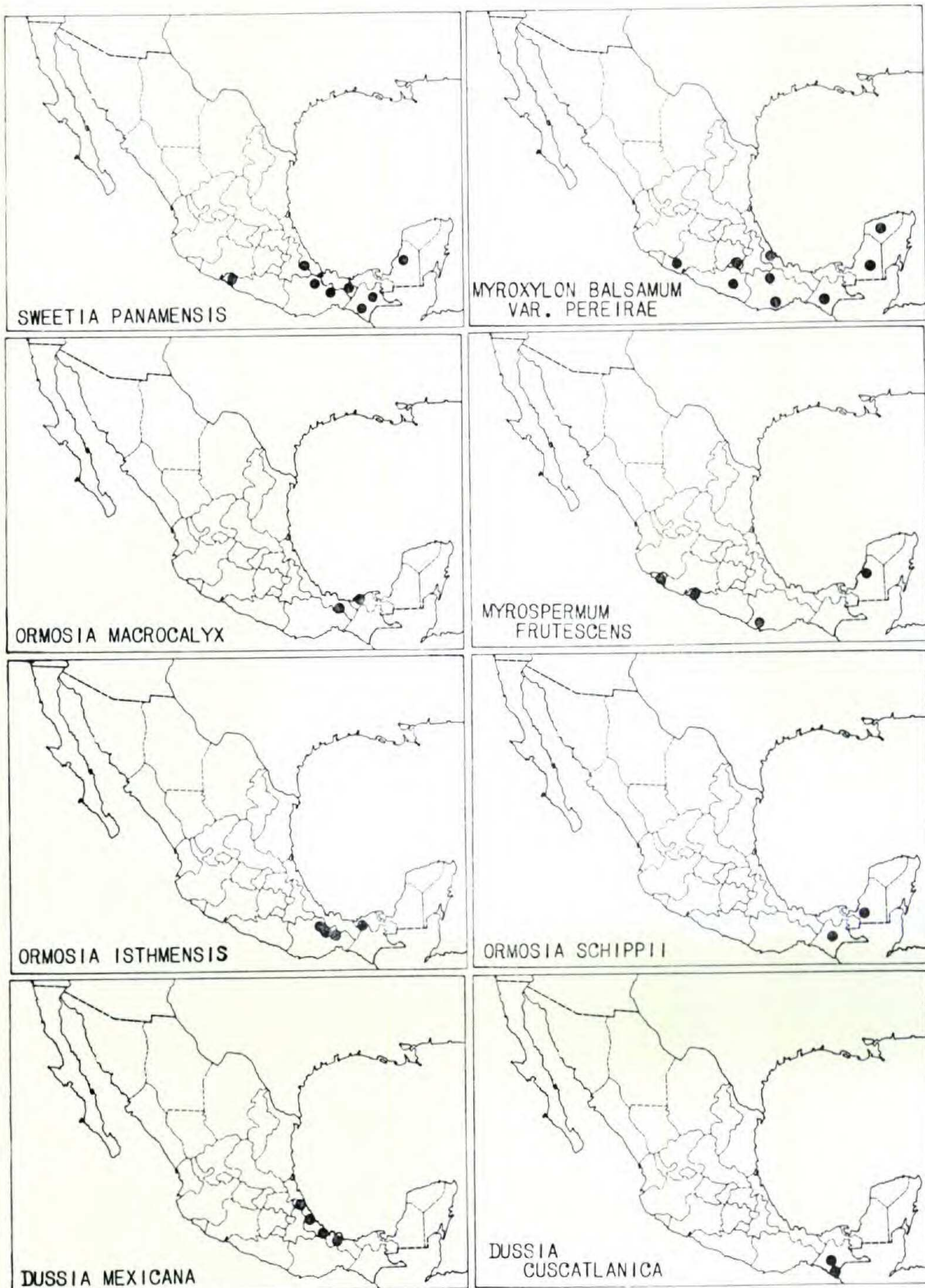


Fig. 1. Geographic distribution of *Sweetia*, *Myroxylon*, *Myrosporum*, *Ormosia*, and *Dussia* in Mexico.

(MEXU), 16984 (MEXU). La Arena, Palenque, *Enríquez s.n.* [*Miranda 7604*] (MEXU, US). "Estación Lacandon a Tabasco Hacienda, Palenque, *Miranda 7285* (MEXU).

CAMPECHE: Champotón, *Miranda 8046* (MEXU, US).

Local names: Chacté, chakté, chile, palo chile, huasillo, huesillo, huesito (México); guayacán (México, Costa Rica); chichipate (Guatemala, El Salvador, Honduras); quina silvestre (Guatemala); Billy Webb (British Honduras); carboncillo (Costa Rica); malvecino (Panamá); rejoy (Colombia); vera de agua (Venezuela).

The wood of this species is strong and durable. The timber is used for heavy construction such as bridges, for wagons and carts, and for various implements.

2. MYROXYLON L. f.

Myroxylon L. f., Suppl. 34, 233. 1781, nom. conserv., non J. R. et G. Forster, 1776. TYPE: *M. peruiferum* L. f. Colombia.

Toluifera L. Sp. Pl. 384. 1753. TYPE: *T. balsamum* L. Colombia.

Myrospermum sect. *Myroxylon* (L. f.) DC. Prodr. 2: 95. 1825.

Reference: H. Harms, Notzbl. Bot. Gart. Berlin 5: 85-98. 1908.

Trees, unarmed; leaves alternate, imparipinnate, 5-15-foliolate; leaflets alternate, with pellucid lines and dots; stipules and stipels minute or lacking; inflorescences axillary or terminal, racemose; flowers small; calyx turbinate-campanulate with 5 subequal lobes, valvate in bud; corolla with 5 free petals, subequal except for a broader standard; stamens 10, the filaments free, essentially equal, the anthers uniform, oblong, acuminate, sagittate, dorsifixed; fruit indehiscent, samaroid, commonly with 1 apical seed; seeds subreniform, resinous, the hilum elliptic, subapical.

Two or three species, in Mexico, Central and South America, sometimes cultivated.

1. *Myroxylon balsamum* (L.) Harms, Notzbl. Bot. Gart. Berlin 5: 94. Figure 1.

Tree, to about 40 m. high; bark gray, resiniferous; leaves 5-11-foliolate, the axis about 6-15 cm. long, puberulent to subglabrous, the lateral leaflets alternate, the blades moderately coriaceous, with pellucid lines and dots, predominantly ovate, sometimes elliptic, 3-14 cm. long, 1-7 cm. broad, the apex obtuse to acuminate, sometimes retuse, the base rounded to subcordate, the surfaces essentially glabrous at maturity, the upper surface nitid or subnitid, the secondary venation relatively inconspicuous; inflorescences with axes puberulent,

the bracts and bracteoles deltoid, the bracts 1-3 mm. long, the bracteoles about 1 mm. long; flowers 12-15 mm. long; calyx minutely pubescent, suffarinese, 5-8 mm. long, the lobes about 1 mm. long, the tube 4-7 mm. long; corolla white, the petals glabrous, spatulate, clawed, subequal except the standard 2-3 times as broad as the others; stamens 10, the filaments essentially equal in length, slightly longer than the calyx, the anthers oblong, resinous, acuminate, sagittate, about 4-4.5 mm. long; ovary and style glabrous, the stigma terminal, truncate; fruit indehiscent, coriaceous, light brown or stramineous, glabrous, samaroid with 1 or, rarely, 2 apical seeds, essentially straight or curved, 6-11 cm. long exclusive of stipe 5-15 mm. long, 2-3 cm. broad and 1 cm. thick at the seed, the basal portion sterile, alate, compressed, 4-7 cm. long, 1-3 cm. broad, 1 mm. thick or less; seed reniform, light brown, resinous, about 15-20 mm. long and 5-8 mm. in diameter.

1a. *Myroxylon balsamum* (L.) Harms, var. *balsamum*.

Toluiifera balsamum L. Sp. Pl. 384. 1753. TYPE: Specimen not known; Tolú, near Cartagena, Colombia.

Myroxylum toluiferum A. Richard, Ann. Sc. Nat. Paris 2: 171, 172. [June] 1824, nom. nov. based on *Toluiifera balsamum* L.

Myroxylon toluifera H.B.K. Nov. Gen. 6: 375. [August] 1824, nom. nov. based on *Toluiifera balsamum* L.

Myrospermum toluiferum (A. Rich.) DC. Prodr. 2: 95. 1825.

The typical variety is characterized by relatively large fruit, 8-11 cm. long, straight or somewhat curved, 2-3 cm. broad with the margins approximately parallel. The leaflets are glabrous, acuminate or sometimes acute at the apex.

Distribution: In forest, up to about 300 meters elevation, Panamá, Colombia, and Venezuela; perhaps elsewhere.

Local names: Bálsamo, balsam of Tolú, Tolú balsam (general); cereipo, estoraque, roble maría, olor, tache (Venezuela); uscum (Bolivia).

The most important difference between the varieties seems to be in the physical and chemical properties of the balsam. The typical variety is mentioned above because it is possible that it occurs in Mexico, particularly in Yucatan. However, because many of the herbarium vouchers are sterile and information concerning the balsam is unavailable, I am citing all Mexican collections as var. *pereirae*.

1b. *Myroxylon balsamum* var. *pereirae* (Royle) Harms, Notizbl. Bot. Gart. Berlin 5: 95. 1908. Figure 1.

Myrospermum Pereirae Royle, Man. Mat. Med. ed. 2, 414. 1853.

TYPE: *Jonathan Pereira s.n.*, El Salvador.

Myrospermum Sonsonatense Pereira [as Pareira] ex Oerst. Vid. Medd. Nat. For. Kjbenh. 27. 1855, based on "Myrospermum of Sonsonate" of Pereira, Pharm. Journ. 10: 280. 1851.

Myroxylon Pereirae (Royle) Klotzsch, Bonplandia 5: 275. 1857.

Toluifera Pereirae (Royle) Baill. Hist. Pl. 2: 383. 1870.

Myroxylon sonsonatense [Oerst.] auct. ex Flückiger & Hanbury, Pharmacogr. 179. 1874.

Toluifera balsamum L. var. β *Pereirae* (Royle) Baill. Traité de bot. méd. 676. 1883.

The fruit of this variety tends to be smaller than that of the typical variety, 6-8 cm. long, straight or, sometimes, strongly curved, the winged lower portion usually narrower toward the stipe. The leaflets commonly are smaller than average for the species, glabrous or with a trace of pubescence along the midvein, the apex acute or, less commonly, breviacuminate.

Distribution: In moist or dry forest at elevations up to about 1000 meters, southern Mexico to Panamá (and Colombia?). Introduced elsewhere.

MEXICO: Without exact locality, *Sessé & Mociño 1039* (F, MA), [Pavon Herb. No. 856] (G).

VERACRUZ: "Mataluca near Cordova", *Finck s.n.* (K, BM). "Km. 10 carretera Cosolapa a El Palmar, a la izquierda de Pueblo Nuevo", *Chavelas, Péres, & Sarukhán 24* (US); *Chavelas ES-1693* (US).

MORELOS: Cuernavaca, *Mell 1* (NY). Oaxtepec, *Reko s.n.* (MEXU, MICH); *Miranda 4106* (MEXU); *Palacios s.n.* (MICH); *Rzedowski 19450* (US). Soconusco, *Altimirano 276* (MEXU).

MICHOACÁN: Coacoman, Trojes, *Hinton 12296* (K, NY, US), *12298* (K, MICH, NY, US). Coacoman, Villa Victoria, *Hinton 12540* (K, US), *13901* (NY, US). Hacienda Coahuayula, *Emrick 29* (F).

GUERRERO: Montes de Oca, Jalapa, *Urbina s.n.* (MEXU).

OAXACA: Pochutla, Cafetal Calverio, *Conzatti, Reko & Makrinius 3079* (US). Cuicatlán, El Faro, *Conzatti 3820* (MEXU). Cerro Espino, *Reko 3622* (MEXU).

CHIAPAS: Without exact locality, *Becerra 54* (MEXU). Cacaluta, Escuintla, *Matuda 16529* (F, NY, MEXU, MICH), *16554* (F, MEXU, MICH, NY). Piedra Rojada, *Enriquez* [Miranda No.] *6740* (MEXU).

CAMPECHE: Campo Experimental Forestal Tropical "El Tormento", Km. 5, carretera Escárcega a Candelaria, *Hernández X. & Chavelas ES-291* (US). "Km. 30 carr. Escárcega-Chetumal", *Chavelas*

& Gómez-Pompa ES-762 (US). "Km. 30, Escárcega-Silvituc, Gómez-Pompa 1327 (MEXU, US).

YUCATAN: Without exact locality, Gaumer s.n. (A, POM, US), 716 (US), 776 (BM, F). Merida, Schott 804 (BM, F, US).

Local names: Bálsamo, bálsamo del Perú, árbol del bálsamo, balsamito, bálsamo de San Salvador, bálsamo negro, cedro chino, chuchupate, chucté, hoitziloxitl [Nahuatl], naba [Maya], nabal, palo del bálsamo, palo de trapiche, semillas del obispo, yagaguienite (Mexico); chirraca (Costa Rica); olor, tache (Colombia).

The balsam, or resin, is used as incense and in medicinal preparations. The wood is suitable for fine cabinet work. The trees are sometimes planted as shade for coffee plantations.

3. MYROSPERMUM Jacq.

Myrospermum Jacq. Enum. Pl. Carib. 4, 20. 1760. TYPE: *M. frutescens* Jacq. Colombia.

Myrospermum Sect. *Calusia* Bert. ex DC. Prodr. 2: 94. 1825.

Calusia Bert. ex. Steud. Nom. ed. 2, 1: 262. 1840, nomen in synonym.

Reference: F. Klotzsch, Bonplandia 5: 272-277. 1857.

Trees or shrubs, unarmed; leaves alternate, imparipinnate; leaflets alternate, with pellucid dots and dashes; stipules and stipels minute or lacking; inflorescences axillary or terminal, racemose; flowers fairly small; calyx turbinate-campanulate with 5 subequal lobes, valvate in bud; corolla with 5 free petals, subequal except for a broader standard; stamens 10, the filaments free, essentially equal, the anthers uniform, ellipsoid, dorsifixed; fruit indehiscent, samaroid, commonly with 1 apical seed; seed reniform, the hilum elliptic, subapical.

One or two species, from southern Mexico to northern South America.

1. *Myrospermum frutescens* Jacq. Enum. Pl. Carib. 4, 20. 1760. TYPE: N. J. Jacquin s.n., Colombia. Figure 1.

Bannisteria purpurea Mill. Gard. Dict. ed. 8. 1768, in part, non L. 1753. TYPE: W. Houstoun s.n., "Campechy," Mexico.

Myroxylon frutescens (Jacq.) Willd. Sp. Pl. 2: 546. 1799.

Myrospermum emarginatum [Bert. ex Klotzsch] Klotzsch, Bonplandia 5: 277. 1857. TYPE: C. G. Bertero s.n. [Balbis Herb no. 3165]. Colombia.

Calusia (as *Caluria*) *emarginata* Bertero ex Klotzsch, *Bonplandia* 5: 277. 1857. nomen in synonym.

Tree or shrub, to about 5 m. high; leaves about 10-23-foliolate, the axis 8-17 cm. long, puberulent or glabrous; leaflets oblong to elliptic, 1-5 cm. long, 0.5-2 cm. broad, the apex obtuse to emarginate, the base rounded, the surfaces usually glabrous, sometimes puberulent, the lower surface sometimes glaucous, the secondary venation inconspicuous; bracts and bracteoles deltoid, 1-2 mm. long, 1 mm. wide, or less; flowers about 12-17 mm. long, fragrant; calyx argenteo-velutinous to subglabrous, 5-6 mm. long, the lobes about 1 mm. long or less; petals white, sometimes with pink, purplish, or yellow markings, pubescent at the apex, otherwise glabrous, spatulate, clawed, the standard about twice as broad as the wing and keel petals; ovary pubescent, at least at the base, 5-7-ovulate (fide Klotzsch), the style glabrous, the stigma terminal, subcapitate, minutely penicillate; fruit 4-5 (-6.5) cm. long including stipe about 5 mm. long, 12-15 mm. wide at widest part of wing, the fertile, terminal portion about 15 mm. long and 10 mm. wide; seed about 8 mm. long, 3 mm. wide, and 2 mm. thick.

Distribution: Deciduous woods, southern and western México to northern South America.

MEXICO: COLIMA: Near Río Salado, *Miranda* 9053 (MEXU); *McVaugh & Koelz* 1441 (MICH).

GUERRERO: Cutzamala, Coyuca, *Hinton* 7291 (F, GH, K, US).

OAXACA: Near Tehuantepec, *Alexander* 111 (F, GH, NY, US), 168 (NY).

CHIAPAS: Rancho La Lanza, near Tiltepec, west of Tonalá, *Miranda* 7268 (MEXU, US).

Campeche: "Campechy," *Houstoun* s.n. (BM).

Local names: Cuerillo, guachipilin hediondo (Mexico); arco, laurel macho (Costa Rica); balsamito, mano de pilón (Colombia).

The plants are balsamiferous but less so than those of *Myroxylon*.

4. ATELEIA (DC.) Benth.

4. *Ateleia* (DC.) Benth. *Comm. Leg. Gen.* 37. 1837 (preprint); *Ann. Wien. Mus. Naturg.* 2: 101. 1838. TYPE: *Pterocarpus ateleia* DC. Mexico.

Pterocarpus section *Ateleia* DC. *Prodr.* 2: 419. 1825; *Mem. Leg.* 393. 1826.

Ateleia [Sessé & Mociño ex] DC. Prodr. 2: 419. 1825; Mem. Leg. 394. 1826, nomen in synonym.

References: R. H. Mohlenbrock, *Webbia* 17: 153-186. 1962; V. E. Rudd, *Contr. U. S. Nat. Herb.* 32: 385-411. 1968.

Shrubs or trees; leaves alternate, imparipinnate; leaflets alternate or subopposite; stipules apparently lacking or reduced to a tuft of hairs; stipels lacking; inflorescences racemose, sometimes paniculate, axillary or terminal, about 5-20 cm. long with about 10 to several hundred flowers; bracts small, deltoid or linear, sometimes persistent, sometimes caducous; bracteoles apparently lacking; flowers 5-14 mm. long; calyx regular, cyathiform, valvate or subimbricate in bud, truncate or subtruncate with 5 lobes or teeth about 0.5 mm. long or less; petal 1, white or yellowish, clawed, cucullate, sometimes expanded, spatulate at anthesis, glabrous or pubescent on the outer face, the margin erose or sinuate; stamens 6-10 (-11), sometimes varying in number in different flowers of the same inflorescence, the filaments alternately subequal in length, shorter than the petal, the anthers uniform, ellipsoid, 1 mm. long or less, dorsifixed; ovary 1-2-ovulate, the stigma essentially sessile, peltate, obliquely terminal; fruit indehiscent, samaroid, semiorbicular with a narrow wing along the upper suture, 2-valved, commonly 1-seeded, compressed, stipitate; seeds reddish-brown to dark brown, reniform, the hilum lateral, orbicular or elliptic.

KEY TO SPECIES OF ATELEIA

- a. Leaflets with lower surface moderately to densely pubescent with crispate or spreading hairs, sometimes glabrescent. *b.*
- b.* Fruit, including stipe, 3.5-4 cm. long. *c.*
- c.* Flowers 10-14 mm. long, the calyx 4-6.5 mm. long, the petal pubescent; fruit pubescent, usually glabrescent, the wing along the upper suture very little developed; seed 9-15 mm. long (México; Michoacán). 1. *A. arsenii*
- c.* Flowers less than 10 mm. long, the calyx 2-3 mm. long, the petal glabrous; fruit glabrous with the wing along the upper suture 1-2.5 mm. wide. *d.*
- d.* Leaflets mostly rounded at the base, asymmetrical; petiolules 3-4 mm. long; fruit 1.5-1.8 cm. wide, including wing 2-2.5 mm. wide (Michoacán). 3. *A. truncata*
- d.* Leaflets mostly cuneate at the base, essentially symmetrical; petiolules 2 mm. long or less; fruit 1-1.5 cm. wide including wing 1-2 mm. wide (Campeche). 8. *A. gummifera*
- b.* Fruit, including stipe, less than 3.5 cm. long. *e.*
- e.* Leaflets mostly rounded at the base, asymmetrical. *f.*
- f.* Fruit tomentose (Chiapas). 6. *A. tomentosa*
- f.* Fruit essentially glabrous, the stipe sometimes puberulent. *g.*

- g. Leaflets moderately pubescent below; fruit 2.5-3 cm. long, including stipe, and about 1.5 cm. wide (Nayarit; western Jalisco). 4. *A. standleyana*
- g. Leaflets tomentulose below; fruit 2-2.3 cm. long, including stipe, and 1-1.2 cm. wide (Veracruz; Oaxaca; Chiapas). 5. *A. pterocarpa*
- e. Leaflets mostly cuneate at base, essentially symmetrical (Campeche) 8. *A. gummifera*
- a. Leaflets with lower surface glabrous or moderately pubescent with appressed or subappressed hairs. *h.*
- h. Fruit 3-4 cm. long, including stipe, and 1.5-2 cm. broad including wing 2-3 mm. wide; leaflets rounded, asymmetrical at base (Nayarit: Isla María Madre). 2. *A. insularis*
- h. Fruit 2-3.5 cm. long, including stipe, and 1-1.5 cm. broad including wing 1-2 mm. wide; leaflets cuneate to obtuse, essentially symmetrical at base. *i.*
- i. Leaflets predominantly ovate, almost as wide as long, the petiolules 2-3 mm. long (Chiapas). 7. *A. albolutescens*
- i. Leaflets predominantly oblong, about twice as long as wide, the petiolules 2 mm. long or less (Campeche). 8. *A. gummifera*

1. *Ateleia arsenii* Standl. Contr. U.S. Nat. Herb. 20: 174. 1919.
 TYPE: *Bro. G. Arsène 6655*, México. Figure 2.

Shrub, to about 1 m. tall; leaves 13-23-foliolate, the axis tomentulose, glabrescent, about 10-20 cm. long; leaflets with blades ovate, ovate-oblong, elliptic, or lanceolate-ovate, 1-5.5 cm. long, 0.5-2.5 cm. broad, acute to obtuse, the base obtuse, usually oblique, the upper surface moderately crisp-pubescent, glabrescent, the lower surface moderately crisp-pubescent, the secondary veins moderately conspicuous, the petiolules about 1 mm. long or less, crisp-pubescent; bracts deltoid to linear, 1-3 mm. long; flowers 10-14 mm. long; calyx tomentulose, 4-6.5 mm. long; petal 10-14 mm. long, 6-8 mm. broad, pubescent on the outer face, usually expanded at anthesis; ovary villous; fruit crisp-pubescent, glabrescent, 3.5-4 cm. long and 1.2-1.8 cm. broad, the upper margin essentially straight or slightly convex, incompletely developed, 1 mm. wide or less, the stipe 1-1.5 cm. long; seed 9-15 mm. long, 6-7 mm. wide, and about 2 mm. thick, the hilum about 0.8 mm. in diameter.

Distribution: In oak woods, at elevations of about 1800 to 3000 meters. Known only from México and Michoacán.

MEXICO: MÉXICO: Nanchititla, *Hinton 3421* (A, F, G, K, MEXU), 6158 (A, F, K, MICH, US), 7621 (A, F, G, K); *Matuda 37472* (MEXU). Temascaltepec, *Hinton 407* (BM), 3526 (F, K), 4240 (A, BM, F, G, K), 5286 (A, BM, F, G, K, NY, US), 6093 (A, BM, G, K, MEXU, NY, US).

MICHOACÁN: Quinceo, vicinity of Morelia, *Arsène* 2790 (GH, L, NY fragment, US). "Morelia, flanca du Quinceo, 2500? ou 3200? fruits en 1910," *Arsène* 6655 (NY fragment, US TYPE).

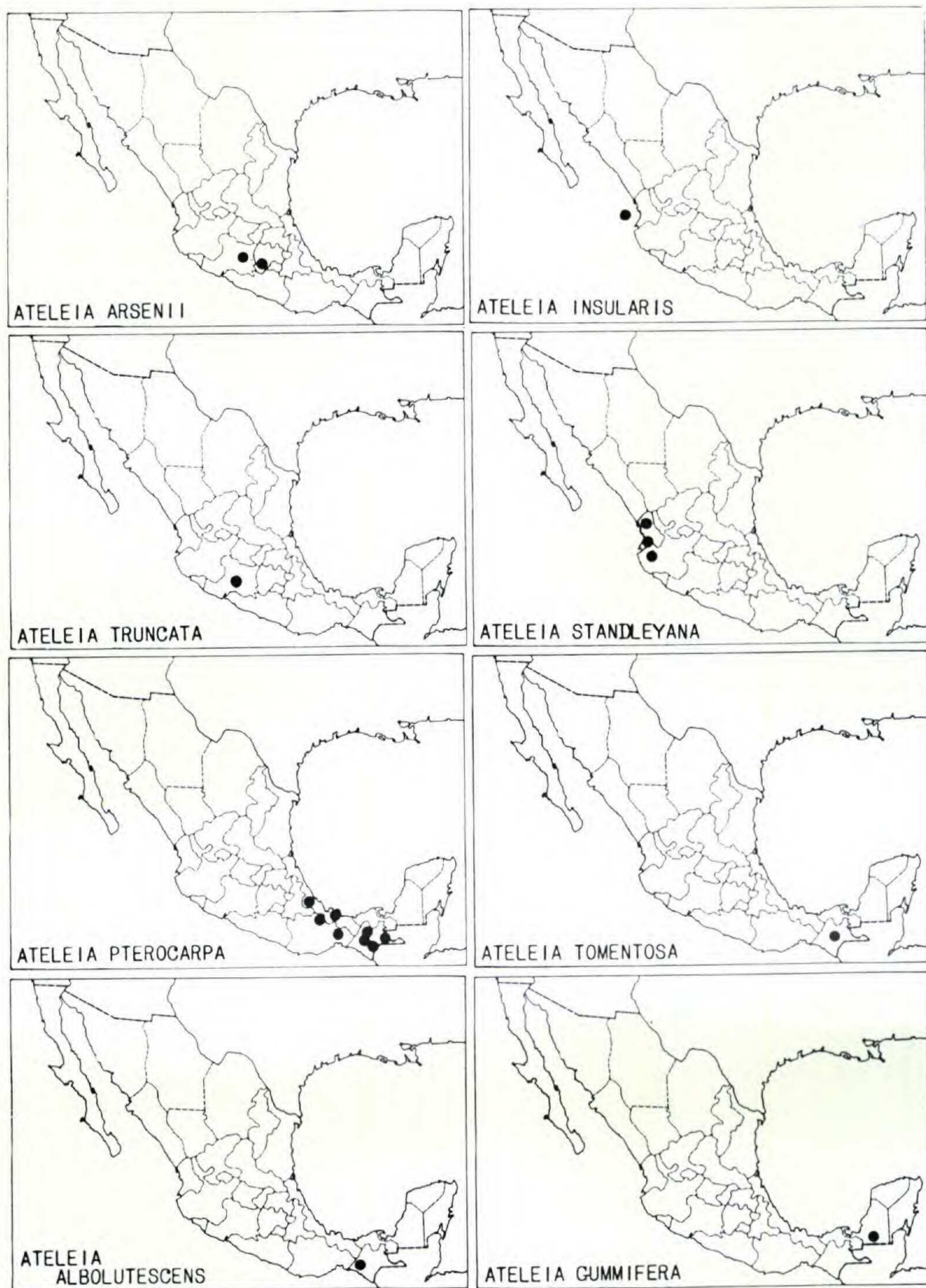


Fig. 2. Geographic distribution of *Ateleia* in Mexico.

Local name: Haba de venado (Temascaltepec, México).

According to Hinton (no. 3421) this species provides food for deer.

2. *Ateleia insularis* Standl. Contr. U.S. Nat. Herb. 20: 175. 1919.

TYPE: *E. W. Nelson 4186*, México. Figure 2.

Tree or shrub, to about 5 m. tall; leaves 9-15-foliolate, the axis puberulous with appressed or subappressed hairs, glabrescent; leaflets with blades ovate, 2-6.5 cm. long, 1-3.5 cm. broad, obtuse, the base obtuse, oblique, the surfaces glabrous except for a few appressed or subappressed hairs, especially along the midvein, the secondary veins moderately conspicuous, the petiolules 2-4 mm. long, puberulent, glabrescent; bracts deltoid, 0.5 mm. long or less; flowers 6-7 mm. long; calyx puberulent, 2.5-3 mm. long; petal 6-7 mm. long and about 4 mm. broad, glabrous, usually expanded at anthesis; ovary essentially glabrous; fruit glabrous, 3-4 cm. long, 1.5-2 cm. broad, the upper margin convex with a wing 2-3 mm. wide, the stipe 0.8-1 cm. long; seed about 7 mm. long, 4 mm. wide, and 4 mm. thick, the hilum about 0.8 mm. in diameter.

Distribution: Known only from Isla María Madre, at elevations of 700 meters or less.

MEXICO: NAYARIT: Isla María Madre, *Nelson 4186* (A, F, NY fragment, P, US TYPE); *Ferris 5573* (A, DS, US), *5742* (DS, US); *Howell 10471* (A); *Maltby 73* (US); *Mason 1843* (K, US).

Essentially the only difference separating this species from *A. standleyana* and *A. truncata* is the presence of appressed rather than crispate or patent pubescence.

3. *Ateleia truncata* Mohlenbrock, Webbia 17: 180, fig. 4, 17. 1962.

TYPE: *F. Salazar s.n.*, México. Figure 2.

Tree or shrub; 11-13-foliolate, the axis about 9-10 cm. long or more, tomentulose; leaflets with blades elliptic to ovate or obovate, 4-6 cm. long and 1.5-3 cm. broad, obtuse, retuse, the base cuneate to obtuse, oblique, the upper surface crisp-pubescent, glabrescent, the lower surface moderately pubescent, the hairs crispate or somewhat spreading, the secondary veins moderately conspicuous, the petiolules 3-4 mm. long, tomentulose; bracts deltoid, 0.5-1 mm. long; flowers 6-7 mm. long; calyx tomentulose, glabrescent, 2.5-3 mm. long; petal about 6-7 mm. long, 4 mm. wide, glabrous, probably expanded at anthesis (mature flowers not seen); ovary glabrous; fruit glabrous, 3.5-4 cm. long, 1.5-1.8 cm. broad, the upper margin convex with a wing 2-2.5 mm. wide, the stipe about 1 cm. long; seed (submature) about 7 mm.

long, 4 mm. broad, and 2 mm. thick, the hilum about 1 mm. in diameter.

Distribution: Known only from the type collection.

MEXICO: MICHOACAN: Hacienda de la Huerta, near Apatzingán, *Salazar s.n.* March 6, 1914 (MEXU, US TYPE).

Local name: Piojillo.

The species is characterized by the relatively large, glabrous fruit.

4. *Ateleia standleyana* Mohlenbrock, *Webbia* 1: 179, fig. 4, 16. 1962.
TYPE: *J. N. Rose, P. C. Standley, & P. G. Russell 14474*,
México. Figure 2.

Tree, to about 12 m. tall; leaves 9-15-foliolate, the axis about 12-20 cm. long, velutinous, glabrescent; leaflets with blades ovate to suborbicular, 1-8.5 cm. long, 1-5.5 cm. broad, obtuse to acute, the base obtuse, oblique, the upper surface minutely crisp-pubescent to subappressed-pubescent along the midvein, otherwise glabrous, the lower surface moderately crisp-pubescent, glabrescent, sometimes glaucous, the secondary veins moderately conspicuous, the petiolules 2-4 mm. long, crisp-pubescent; bracts deltoid, about 1 mm. long; flowers 6-7 mm. long; calyx 2-3 mm. long, tomentulose; petal 6-7 mm. long and about 2 mm. wide, cucullate or expanded at anthesis; ovary pubescent along the margin and at the base, otherwise glabrous; fruit mostly glabrous, 2.5-3 cm. long and about 1.3-1.5 cm. broad, the upper margin concave or convex with a wing 1-1.5 mm. wide, sometimes pubescent at the base of the stigma, the stipe puberulous to subglabrous, about 6 mm. long; seed about 6 mm. long, 4 mm. broad, and 1.5 mm. thick, the hilum about 1 mm. long and 0.9 mm. wide.

Distribution: Known from Nayarit and western Jalisco, México, at elevations of 30-450 meters.

MEXICO: NAYARIT: "Dry hill, vicinity of Acaponeta, Tepic," *Rose, Standley, & Russell 14474* (A, F TYPE, GH, NY fragment, US). 1 km. north of El Cuatante, Valle de Banderas, *Rzedowski 17870* (INCB). JALISCO: Soyatán, 30 km. south of Talpa, *Rzedowski 15173* (INCB, US). Sta. Lucía, 7 km. north of Llano Grande, *McVaugh (Fedde) 21275* (MICH).

Local name: Jediondillo (Jalisco).

5. *Ateleia pterocarpa* Moc. & Sessé ex D. Dietr. *Syn. Pl.* 4: 1219. 1847.
Based on *Pterocarpus ateleia* DC. Figure 2.

Ateleia pterocarpa [Sessé & Moc. ex] DC. Prodr. 2: 419. 1825; Lég. Mem. 394. 1826, nomen in synon.

Pterocarpus ateleia DC. Prodr. 2: 419. 1825; Lég. Mem. 394. 1826. TYPE: Plate 288, a painting from the unpublished "Flora Mexicana" of Sessé & Mociño, in the DeCandolle Library (G-DC; F. M. Neg. 30639 ex G-DC). [Lectotype by A. DeCandolle, "Calques des dessins de la Flore du Mexique de Mociño et Sessé qui ont servi des types d'espèces dans le systema ou le prodromus" 2: 288. 1874]. "Habitat in agris Cordovae et in Praedio S. Josephi" (Sessé & Mociño, Fl. Mex. ed. 2, 164. 1894, as *Amorpha*.)

Tree or shrub, to about 7 m. tall; leaves 7-18-foliolate, the axis tomentulose, to about 15 cm. long; leaflets with blades ovate to elliptic, 2-8.7 cm. long, 1-5 cm. broad, obtuse to acute, sometimes retuse, the base rounded or acute, oblique, the upper surface puberulent along the midvein, otherwise glabrous, the lower surface moderately tomentose, glabrescent, the secondary veins moderately conspicuous, the petiolules 2-3 mm. long, tomentulose; bracts deltoid, 1 mm. long; flowers 4-5 mm. long; calyx tomentulose, about 1.5-2 mm. long; petal 4-5 mm. long and 1.5-2 mm. wide, glabrous; ovary glabrous except for some pubescence on the stipe; fruit glabrous, 2-2.3 cm. long, 1-1.2 cm. broad, the wing 1-1.5 mm. wide, the stipe 4-7 mm. long, sometimes pubescent toward the base; seed about 5 mm. long, 3 mm. wide, and about 2 mm. thick.

Distribution: Southern México, in savanna, at elevations of about 200 to 1000 meters.

MEXICO: Without exact locality, presumably Veracruz, "in agris Cordovae" or "in Praedio S. Josephi", *Sessé & Mociño 2017* (F, MA in part).

VERACRUZ: Acatlán, *Salazar s.n.* (US). "Vallée de Cordova," *Bourgeau 1899* (BM, K). Chihuilapan, south of Laguna de Catemaco, Los Tuxtlas, *Sousa 2376* (MEXU, US).

OAXACA: Chivela, *Mell 15* (NY, US fragment). Temascal, *Sousa 1319* (MEXU). Near Presa Alemán, Temascal, *González-Quintero 533* (ENCB, US).

CHIAPAS: Siltepec, *Matuda 1588* (A, K, MEXU, MICH, NY, US). Amatenango del Valle, *Matuda 5833* (LL, MEXU, US), *15833* (F). Pishtimbak, north of Tuxtla Gutierrez, *Miranda 6029* (MEXU, US). Rancho Lindavista, 24 km. east of Villa Flores, *Miranda 5992* (MEXU, US), *6435* (MEXU, US). San Quintín, *Sohns 1639* (MICH, US). Habenal, Tenejapa, *Breedlove 6487* (DS, US), *7644* (DS, ENCB, US).

Local name: Huapinoles (Veracruz).

Among Mexican *Ateleia* this species has the smallest

fruit, with the shortest stipes. The pubescent leaflets are similar to those in *A. tomentosa*.

6. *Ateleia tomentosa* Rudd, Contr. U.S. Nat. Herb. 32: 397. 1968.
TYPE: *D. E. Breedlove 11395*, Mexico. Figure 2.

Tree, about 12 m. tall; leaves 9-11-foliolate, the axis tomentose, about 8-12 cm. long; leaflets with blades ovate, 1-6 cm. long and 0.8-3 cm. broad, acute or subacute, the base rounded, usually oblique, the upper surface moderately pubescent, glabrescent, the lower surface tomentose, the secondary venation moderately conspicuous, the petiolules 2-3 mm. long, tomentulose; bracts deltoid, about 1 mm. long; flowers about 6 mm. long; calyx tomentulose, about 2.5 mm. long; petal glabrous, about 6 mm. long and 4-5 mm. wide, somewhat expanded at anthesis; ovary pallid-villous; fruit [submature] tomentose, 2.5-2.8 cm. long and 1.2-1.3 cm. broad, the upper margin straight or concave, the wing about 1 mm. wide, the stipe about 8 mm. long; mature fruit and seed not seen.

Distribution: Known only from the type collection.

MEXICO: CHIAPAS: "Wooded slope 3 miles southwest of Pinola Las Rosas along road to Soyatitán, Municipio of Venustiano Carranza, elevation 4200 feet," *Breedlove 11395* (DS, US TYPE).

The distinctive tomentose fruits distinguish this species from the otherwise similar *A. pterocarpa*.

7. *Ateleia albolutescens* Mohlenbrock, Webbia 17: 182, fig. 4, 18. 1962.
TYPE: *C. A. Purpus 9248*, México. Figure 2.

Tree or shrub, to about 6 m. high; leaves 5-9-foliolate, the axis puberulent, about 6-10 cm. long; leaflets with blades predominantly ovate, sometimes rhombic to suborbicular, 3-7.5 cm. long, 2-5 cm. broad, obtuse to acute, sometimes retuse, the base cuneate, the upper surface puberulent along the midvein, glabrescent, sometimes nitid, the lower surface puberulent with whitish, subappressed hairs, glabrescent, the secondary veins relatively inconspicuous, the petiolules 2-3 mm. long, puberulent; bracts deltoid, about 6 mm. long; flowers about 6 mm. long; calyx tomentulose, 1.5-2 mm. long; petal about 6 mm. long and 2-3 mm. wide; ovary glabrous or ciliate, glabrescent, the stipe usually pubescent; fruit glabrous, 2-2.5 cm. long and 1-1.5 cm. broad, the upper margin convex or almost straight with a wing 1-2 mm. wide, the stipe puberulent, glabrescent, about 5-6 mm. long; seed 4.5-5 mm. long and 3-3.5 mm. wide.

Distribution: Known only from the general area of the type collection, in rocky ravines.

MEXICO: CHIAPAS: Hacienda Monserrate, [southeast of Cintalapa] *Purpus* 9248 (F, GH TYPE, NY, UC, US), 10291 (US), 10544 (A, F, NY), 10549 [or 10544?] (GH, UC), 10577 [or 10544?] (A). "Tuxtla Gutierrez-Jalisco" [Arriaga], *Purpus* 9248 (US).

This species appears to be closely related to *A. pterocarpa* and *A. gummifera*. The various sheets of *Purpus* 9248 apparently do not represent a "pure" collection. Material from two different plants can be found on some sheets. The holotype at GH appears to be a mixed sheet, as is one sheet at US bearing a different locality citation.

8. *Ateleia gummifera* (DC.) D. Dietr. Syn. Pl. 4: 1219. 1847. Figure 2.

Pterocarpus gummifer Bert. ex DC. Prodr. 2: 419. 1825; Mém. 395, pl. 57, f. 1. 1826. TYPE: *C. G. L. Bertero s.n.*, "S. Doming.," Dominican Republic.

Dalbergia gummifera Spreng. ex DC. Mém. Leg. 395. 1826, nomen in synon.

Swartzia multijuga A. Rich. Essai Flor. Cuba 457. 1846; in Sagra, Hist. Fis., Pol., y Nat. Cuba 10: 201. 1846; 12: tab. 42. 1846, non Vog. 1837. TYPE: *R. de la Sagra?*, Cuba.

Ateleia cubensis Griseb. Mem. Am. Acad. N.S. 8: 180. 1860, nom. nov. for *Swartzia multijuga* A. Rich.

Ateleia multijuga (A. Rich.) A. S. Hitch. Rep. Mo. Bot. Gard. 4: 80. 1893.

Ateleia tumida Mohlenbrock, Webbia 17: 166, fig. 3, 10. 1962. TYPE: *M. Fuertes s.n.*, Dominican Republic.

Ateleia gummifera var. *cubensis* (Griseb.) Mohlenbrock, Webbia 17: 172. 1962.

Ateleia parvifolia Mohlenbrock, Webbia 17: 174. 1962. TYPE: *E. Ekman* 7532, Cuba.

Shrub or small tree, to about 7 m. tall; leaves 5-13-foliolate, the axis puberulent, glabrescent, about 5-10 cm. long; leaflets with blades elliptic, rhombic, oblong, obovate, or ovate, 1-8 cm. long, 0.5-3.5 cm. broad, obtuse to subacute, sometimes retuse, the base cuneate to obtuse, the surfaces usually glabrous at maturity, sometimes pubescent, especially along the midvein, the hairs appressed or crispate, the secondary veins usually inconspicuous, the petiolules 2 mm. long or less, puberulent, glabrescent; bracts deltoid, commonly 1 mm. long; bracteoles apparently lacking; flowers 5-6 mm. long; calyx tomentulose, sometimes glabrescent, 2-3 mm. long; petal 5-6 mm. long, 2-4 mm. wide, cucullate, sometimes expanded at anthesis; ovary puberulent along the margin and at the base, otherwise glabrous; fruit glabrous, 2-3.5 cm. long and 1-1.5 cm. broad, the upper margin with

a wing 1-2 mm. wide, the stipe 0.5-1.3 cm. long, puberulent or glabrous; seed 5-7 mm. long, 3-3.5 mm. broad, and about 2 mm. thick, the hilum 1 mm. in diameter.

Distribution: México, northern Central America, and the West Indies, at elevations from about sea level to 1000 meters.

MEXICO: CAMPECHE: Tuxpeña, Lundell 849 (A, DS, GH, K, MICH, NY, UC, US), 862 (DS, GH, MICH, NY, UC, US).

Local names: Balsamo hediondo, cerezo (Cuba); tushche (British Honduras).

This species is relatively wide-ranging and exhibits considerable variation, especially in shape and pubescence of leaflets; most specimens have glabrous or sparsely appressed-pubescent leaflets but those from the Yucatan peninsula, eastern Cuba, and Hispaniola tend toward crisp-pubescence.

5. DUSSIA Krug and Urban ex Taubert

Dussia Krug and Urban ex Taubert in Engler and Prantl, Natürl. Pflanzenfam. 3, Abt. 3: 193. 1892. TYPE: *D. martinicensis* Krug & Urban ex Taubert. Martinique.

Vexillifera Ducke. Arch. Jard. Bot. Rio de Janeiro 3: 139. 1922. TYPE: *V. micranthera* Ducke. Brazil.

Cashalia Standley, Journ. Wash. Acad. Sci. 13: 440. 1923. TYPE: *C. cuscatlanica* Standl. El Salvador.

Reference: V. E. Rudd, Contr. U.S. Nat. Herb. 32: 247-277. 1963.

Trees, unarmed; leaves alternate, imparipinnate; leaflets alternate or subopposite; stipules and stipels apparently lacking; inflorescences pseudoterminal, racemose; flowers of medium size, about 15-25 mm. long; calyx campanulate, somewhat oblique with 5 subequal teeth or lobes; corolla papilionaceous with 5 separate petals, pink to purple, the standard pubescent on the outer face; stamens 10, subequal, the filaments essentially separate to the base, or with some adhesion near the base in groups of two to four, the anthers uniform, small, ellipsoid, seeds red, ellipsoid or subcylindrical, the hilum linear, subapical or lateral.

About 10 species, in tropical America.

KEY TO SPECIES OF DUSSIA

- Leaves 5-15-foliolate, the axis about 15-60 cm. long, the leaflets ovate, oblong, or obovate, obtuse or acute, or sometimes acuminate, 3-26 cm. long; bracts lanceolate, entire, the apex acute or acuminate, 5-9 mm. long and 0.5-2 mm. wide; bracteoles lanceolate, entire, obtuse or acute, 3-4 mm. long and 0.5-1 mm. wide (Veracruz) 1. *D. mexicana*
- Leaves 11-25-foliolate, the axis about 30-100 cm. long, the leaflets mostly oblong, acuminate, 7-35 cm. long; bracts tridentate to rhombic or lanceolate, erose or entire, 5-10 mm. long and 2-4 mm. wide; bracteoles ovate, entire or dentate, acuminate, 5-7 mm. long and 2-3 mm. wide (Chiapas) 2. *D. cuscatlanica*

1. *Dussia mexicana* (Standl.) Harms, Repert. Sp. Nov. 19: 294. 1924. Figure 1.
Ormosia mexicana Standl. Contrib. U.S. Nat. Herb. 23: 436. 1922.
 TYPE: C. A. Purpus 6326. Mexico.

Tree, to about 40 m. high; leaves 5-15-foliolate, the axis about 15-60 cm. long, fulvo-tomentulose, glabrescent, the leaflets alternate or subopposite, the blades 3-26 cm. long, 2-10 cm. broad, ovate to oblong, the terminal leaflet usually obovate, the apex predominantly obtuse, acute or sometimes acuminate, the acumen to about 12 mm. long, the base obtuse to subcordate, often oblique, the upper surface glabrous, the lower surface moderately puberulent with patent or subpatent hairs or somewhat crispate along the major veins, the venation moderately conspicuous, sometimes darkening on drying, the tertiary veins scalariform; inflorescences with axes ferrugino-tomentose, the bracts lanceolate, acute to acuminate, 5-9 mm. long, 0.5-2 mm. broad, the bracteoles lanceolate, obtuse to acute, 3-4 mm. long and 0.5-1 mm wide; flowers 18-22 mm. long; calyx ferrugino-tomentulose, 8-10 mm. long, the tube 5-6 mm. long, the teeth 3-4 mm. long; petals pink with white pubescence; fruit minutely fulvo-velutinous, 1- or 2-seeded, 5-6 cm. long and about 2.5 cm. broad; seeds not seen but, presumably, like those of *D. cuscatlanica*.

Distribution: Known only from the state of Veracruz, in humid forest.

MEXICO: VERACRUZ: Zacuapan, Purpus 6326 (BM, GH, MO, NY, UC, US TYPE of *Ormosia mexicana*). El Mirador, Purpus 277 (A), 16459 (A, F, K, US); Leibmann 5355 (C, F). Zontecomapan, Andrle & Axtell 5 (US). Tapalapan, Andrle 91 (US). Camino Misantla-Yecuatla, Gómez-Pompa 952 (MEXU, US), 1162 (MEXU). Cochinitos, Coyame, NE. Laguna de Catemaco, Sousa 2775 (MEXU, US).

Local names: Frijolillo, jaboncillo, palo de zopilote.

It is possible that this and the next species should be synonymous. The differences are weak and, without knowing the locality of origin of a specimen, it is often difficult to decide which name should be applied.

2. *Dussia cuscatlanica* (Standl.) Standl. & Steyermark, Field Mus. Pub. Bot. **22**: 341. 1940. Figure 1.
Cashalia cuscatlanica Standl. Journ. Wash. Acad. Sci. **13**: 441. 1923. TYPE: *P. C. Standley 20197*. El Salvador.
Dussia grandifrons Johnst. Journ. Arn. Arb. **19**: 118. 1938. TYPE: *A. F. Skutch 2027*. Guatemala.

Tree, to about 50 m. high; leaves 11-25-foliolate, the axis about 30-100 cm. long, fulvo- or ferrugino-pubescent with crispate or somewhat patent hairs, the leaflets alternate or subopposite, the blades 7-35 cm. long, 2.5-9 cm. broad, commonly oblong, sometimes ovate or obovate, the apex acuminate to acute, the base obtuse, truncate, or subcordate, the upper surface glabrous, the lower surface moderately pubescent with subpatent or crispate hairs, the venation moderately conspicuous, the tertiary venation scalariform; bracts tridentate to rhombic, or lanceolate, erose or entire, acuminate, 5-10 mm. long, 2-4 mm. broad; bracteoles obovate, entire or dentate, acuminate, 5-7 mm. long and 2-3 mm. broad; flowers (15-) 18-25 mm. long; calyx ferrugino-tomentulose, 8-10 mm. long, the tube and teeth about equal in length; petals pink with greenish or purplish markings and white pubescence; fruit fulvo-velutinous, 1- or 2-seeded, 5-10 cm. long, 2.5-3.5 cm. broad and about 1.5-2 cm. thick; seeds about 2-3.5 cm. long and 1.3-1.7 mm. in diameter.

Distribution: In forest, southern Mexico to Costa Rica, at elevations of 20-2000 meters.

MEXICO: CHIAPAS: Near Finca Prusia, south of Jaltenango, *Miranda 6964* (MEXU, US). Esperanza, Escuintla, *Matuda 18585* (MEXU). La Grada, Acacoyagua, *Matuda 18640* (MEXU).

Local names: Cedillo, matabuey (México); cashal (El Salvador); cereza de montaña, garvancillo de montaña, palo de tigre (Guatemala).

In El Salvador the trees of this species are cut for lumber.

6. ORMOSIA Jackson

Ormosia Jacks. Trans Linn. Soc. Lond. **10**: 360, t. 25-27. 1811, nom. conserv. TYPE: *Robinia coccinea* Aubl. French Guiana.

Toulichiba Adans. Fam. 2: 326. 1763, nom. rejec. Monomial.

Ormosiopsis Ducke, Arch. Jard. Rio de Janeiro **4**: 61. 1925.

TYPE: *Clathrotropis* (?) *flava* Ducke. Brazil.

Macroule Pierce, Trop. Woods **71**: 2. 1942. TYPE: *Ormosia coutinhoi* Ducke. Brazil.

Reference: V. E. Rudd, Contrib. U.S. Nat. Herb. **32**: 279-384. 1965.

Trees, unarmed; leaves alternate, imparipinnate; leaflets opposite; stipules small, deltoid to linear, caducous, apparently lacking in some species; stipels usually lacking, occasionally present in some species; inflorescences terminal or pseudoterminal, racemose; flowers small to medium in size, about 6-25 mm. long; calyx campanulate, hypanthoid, with 5 subequal teeth or lobes; corolla papilionaceous with 5 separate petals, yellow to blackish purple, the standard glabrous on the outer face; stamens normally 10, alternately subequal, the smaller sometimes sterile or lacking, the filaments separate to the base, the fertile anthers small, ellipsoid, dorsifixed; stigma bilobed, usually lateral; fruit commonly dehiscent, a few species indehiscent, glabrous to velutinous, moderately compressed, 1-6 seeded; seeds [Mexican species] red or bicolored red and black, subglobose, the hilum apical, elliptic.

About 100 species, with 50 in tropical America.

KEY TO SPECIES OF ORMOSIA.

- Leaflets glabrous on both surfaces with about 5-9 pairs of secondary veins only approximately parallel, arcuate, irregularly spaced; fruit coriaceous, finely pubescent, glabrescent; seeds red (Veracruz; Tabasco) 1. *O. macrocalyx*
- Leaflets pubescent or subglabrous below with about 10-15 pairs of secondary veins, essentially parallel and regularly spaced; fruit lignous, glabrous or nearly so; seeds red or red and black.
- Seeds red; fruit glabrous, nitid or subnitid; flowers about 10 mm. long; leaflets with lower surface finely velutinous along the major veins, otherwise finely and sparsely appressed-pubescent (Oaxaca) 2. *O. isthmensis*
- Seeds red and black; fruit essentially glabrous at maturity but often with a trace of pubescence at the base; flowers 18-22 mm. long; leaflets with lower surface loosely crisp-pubescent (Chiapas) 3. *O. schippii*

1. *Ormosia macrocalyx* Ducke, Arch. Jard. Bot. Rio de Janeiro 3: 137. 1922. TYPE: *A. Ducke 7345*. Brazil. Figure 1
Ormosia apulensis Cortés, Flora de Colombia, 61. 1919, nomen nudum. TYPE *J. J. Triana 4336*. Colombia.
Ormosia toledoana Standl. Carnegie Inst. Publ. 461: 64. 1935. TYPE: *W. A. Schipp 1052*. British Honduras.
Ormosia chlorocalyx Ducke, Bol. Téc. Inst. Agron. Belém, 2: 23. 1944. TYPE: *A. Ducke 1516*. Brazil.

Tree, to about 40 m. high; stipules linear, about 5 mm. long, caducous; leaves 7-11-foliolate, the axis 10-45 cm. long, sparsely pubescent, glabrate, the leaflets with blades coriaceous to subcoriaceous, ovate to ovate-oblong, 6-19 cm. long, 3-9 cm. broad, the apex obtuse to breviacuminate, the base rounded to subcordate, the upper surface glabrous, nitid or subnitid, the lower surface glabrous, the secondary veins inconspicuous; bracts linear, 3-10 mm. long, 1 mm. broad or less; bracteoles subulate, 1-1.5 mm. long; flowers 18-25 mm. long; calyx 8-15 mm. long, pubescent with gray, subappressed hairs, the tube (3-) 8-10 mm. long, the teeth 3-5 mm. long; petals lilac to dark purple; fruit dehiscent, coriaceous, black or brown, glabrescent but often with some fine, fulvous pubescence at maturity, 1-6- (commonly 2- or 3-) seeded, 3-10 cm. long, 2-3.5 cm. broad, slightly constricted between the seeds, 10-15 mm. thick; seeds red, lustrous, 10-13 mm. long, 10 mm. broad, and 7-8 mm. thick.

Distribution: In wet, swampy forest, southern México to the Amazon basin of Brazil, at elevations up to about 100 meters.

MEXICO: VERACRUZ: Fortuño, Río Coatzacoalcos, *Ll. Williams 8926* (F, G, K, S, U, US). Fortuño, Río Coachapa, *Gómez-Pompa 114* (MEXU).

TABASCO: Cocoital, Comalcalco, *Guzmán s.n.* (US).

Local names: Colorín, caracolillo (México); alcornoque, casique, pernila del monte (Panamá); chocho grande (Colombia); tento (Brazil); huyruro (Peru).

2. *Ormosia isthmensis* Standl. Publ. Field Mus. Bot. 17: 264. 1937. TYPE: *Ll. Williams 9123*. México. Figure 1

Tree, to about 50 m. tall; stipules deltoid, acicular, about 1-2 mm. long, 1-1.5 mm. broad at the base, pubescent; leaves (3-5-) 7-13-foliolate, the axis 9-45 cm. long, pubescent, glabrescent; leaflets with blades coriaceous, ovate, oblong to obovate-oblong, 3-35 cm. long, 2-10

cm. broad, acute to abruptly acuminate, the acumen to about 10 mm. long, the base obtuse or truncate, the upper surface glabrous, subnitid or nitid, the lower surface finely velutinous along the major veins, otherwise finely and sparsely appressed-pubescent, glabrescent, the secondary veins about 10-12 pairs, moderately raised; bracts and bracteoles linear, 2-3 mm. long; flowers about 10 mm. long; calyx cano- to fulvo-velutinous, 7-8 mm. long, the tube 3-4 mm. long, the teeth about 4 mm. long; petals pink-purplish with white markings; fruit dehiscent, lignous, black or dark brown, glabrous, nitid or subnitid, 1-3, commonly 1-seeded, 3-7 cm. long, 2-3 cm. broad; seeds red, 10-13 mm. long, 8-11 mm. wide, and 6-8 mm. thick.

Distribution: In rain forest, from southern México to northern Colombia, at elevations of about 5-800 meters.

MEXICO: OAXACA: Ubero, *Ll. Williams 9423* (BM, F TYPE, G, K, MICH, S, US). Santiago Yaves, Choapan, *Reko 9* (F). San Juan Lalana, Choapan, *Schultes & Reko 822* (F, GH, NA, UC). Sierra Juarez, *Gómez-Pompa, Sharp, & Hernandez 380* (MEXU, MICH, RSA, UC, US). "Arriba de Valle Nacional, rumbo a Oaxaca," *Gómez-Pompa 5* (MEXU).

TABASCO: Huimanguillo, *Chavelas & Gonzalez 134* (MEXU); *Barlow 30/99* (MICH).

Local names: Colorín, mū-sa, palo de Salvador, frijolillo (México); acu-té (Guatemala); hormiga (British Honduras); alasán (Costa Rica).

3. *Ormosia schippii* Pierce ex Standl. and Steyerl., emend Rudd, *Trop. Woods No. 113*: 125. 1960. TYPE: *W. A. Schipp 1297*. British Honduras. Figure 1

Ormosia schippii Pierce ex Standl. & Steyerl. *Fieldiana Bot. 24* (5): 311. 1946, pro parte.

Tree, to about 35-40 m. high; stipules not seen; leaves 5-9-foliolate, the axis 10-35 cm. long, tomentulose, glabrescent, the blades coriaceous or subcoriaceous, ovate to ovate-oblong or sometimes obovate, 5-27 cm. long, 3-11 cm. wide, the apex acute or breviacuminate, the acumen to about 10 mm. long, the base obtuse to subcordate, the upper surface glabrous except for a trace of pubescence along the major veins, the lower surface moderately pubescent, the hairs loosely crispate, the secondary veins raised; bracts lanceolate, acuminate, 8-10 mm. long, 2-2.5 mm. broad; bracteoles linear, 7-8 mm. long, 1 mm. broad; flowers 18-22 mm. long; calyx cinereo- to fulvo-tomentulose, 7-10 mm. long, the tube 4-5 mm. long, the teeth 3-5 mm. long; petals reddish

purple; fruit dehiscent, sublignous, black or dark brown, essentially glabrous at maturity but often with a trace of pubescence at the base, commonly 1-seeded, 2-3 cm. long, 2-2.5 cm. broad, about 1.5 cm. thick; seeds bicolored, red and black, 12-13 mm. long, 10-12 mm. broad, and 7-9 mm. thick.

Distribution: In rain forest, generally in swampy places, southern México and British Honduras, at elevations up to about 150 meters.

MEXICO: CHIAPAS: Selva Lacandona, *Gómez-Pompa 339* (MEXU, US). Between La Arena and Salas, *Miranda 8471/1* (MEXU).

CAMPECHE: Campo Experimental El Tormento, Escárcega, *Marroquin s.n.* (MEXU).

Local names: Palo macho, carne de caballo (Chiapas); bayo, yabo (Campeche); John Crow bead (British Honduras).

7. SOPHORA L.

- Sophora* L. Sp. Pl. 373. 1753. LECTOTYPE: *S. alopecuroides* L. (Britton & Brown, Ill. Fl. N. U. S. ed. 2, 2: 342. 1913). "Oriente."
Broussonetia Gómez-Ortega, Hort. Matr. Dec. 61. 1798, nom. rej., non L'Hér. ex Vent. 1799, nom. cons. TYPE: *B. secundiflora* Gómez-Ortega. Cultivated, ex México.
Patrinia Raf. Journ. Phys. Chim. Hist. Nat. 89: 97. 1819, non Juss. 1807. TYPE: *Sophora sericea* Nutt. South Dakota.
Sophora sect. *Eusophora* DC. Prodr. 2: 95. 1825. Based on 10 species, including *S. tomentosa* L.
Sophora sect. *Pseudosophora* DC. Prodr. 2: 96. 1825. TYPE: *S. alopecuroides* L. "Oriente."
Pseudosophora (DC.) Sweet, Hort. Brit. ed. 2. 122. 1830.
Styphnolobium Schott, Wien. Zeitschr. 3: 844. 1830. TYPE: *Sophora japonica* L. Japan.
Vexibia Raf. Neogen. 3. 1825; Atlantic Journ. 144. 1832, nom. nov. for *Patrinia* Raf.
Calia Berlandier in Mier-Terán, Mem. Comisión Limites 13. 1832. TYPE: *C. erythrosperma* Berlandier. Texas and Mexico.
Zanthyrasis Raf. New Fl. 3: 84. 1838. TYPE: *Z. paniculata* Raf. South Florida and Cuba.
Agastianis Raf. New Fl. 3: 85. 1838, nom. nov. for *Broussonetia* Gómez-Ortega.
Dermatophyllum Scheele, Linnaea 21: 458. 1848. TYPE: *D. speciosum* Scheele. Texas.
Vibexia Raf. ex Jacks. Index Kew. 2: 1193. 1895, error for *Vexibia* Raf.

Trees, shrubs, or perennial herbs; leaves alternate, imparipinnate; leaflets alternate to opposite; stipules commonly deltoid, sometimes lacking; stipels lacking in Mexican species; inflorescences terminal or sometimes axillary, racemose or paniculate; flowers small to medium in size, about 1-4.5 cm. long; calyx campanulate with 5 subequal lobes, sometimes subtruncate; corolla papilionaceous, yellow, white, or blue to violet, glabrous, the keel petals commonly joined; stamens 10, free or the filaments united at the base, alternately subequal; anthers ellipsoid, dorsifixed, about 1 mm. long; stigma minutely capitate-penicillate; fruit commonly indehiscent, 1-6 (-15) seeded, somewhat torulose; seeds spherical or subellipsoid, red or yellowish to light brown, the hilum lateral or subapical, elliptic or orbicular.

About 75 species, worldwide in tropical and temperate regions.

The generic lectotype, *S. alopecuroides*, designated by Britton and Brown, has been accepted for the Index Generi-corum. Presumably, that species was chosen from six assigned to *Sophora* in the first edition of Species Plan-tarum because it alone was cited by Linnaeus in his earlier work, Hortus Cliffortianus, and represented his original concept of the genus.

However, Hitchcock and Green (in Proposals by British Botanists 111-119. 1929; Brittonia 6: 117. 1947) and Hutchin-son (The Genera of Flowering Plants 1: 328. 1964) have considered *S. tomentosa* L. to be the type of *Sophora*, a view that I favor in the light of DeCandolle's and, later, Sweet's treatments of the genus. As shown in the above list of synonymy, DeCandolle selected *S. alopecuroides* as the one discordant species to be segregated into his section *Pseudosophora*, in contrast to the ten species, including *S. tomentosa*, placed in section *Eusophora*. A few years later, Sweet raised *Pseudosophora* to generic status. Thus, we have the incongruous situation that, if the generic concept of Sweet and the typification of Britton and Brown be fol-lowed, *Pseudosophora* would be reduced to *Sophora*, the prior synonym, and the true *Sophora* sensu DeCandolle, would have to be transferred to such later, synonymous genera as *Styphnolobium*, *Calea*, and *Zanthyraxis*. Fortu-nately, except for *Styphnolobium*, which is sometimes

recognized as a separate genus, the others are commonly retained as synonyms of *Sophora*, sensu latior.

KEY TO SPECIES OF SOPHORA.

- Plants herbaceous from a woody root, to about 30 cm. high; flowers 15-20 mm. long; fruit about 5 mm. in diameter (Coahuila; Chihuahua; San Luis Potosí) 1. *S. nuttalliana*
- Plants woody, shrubs or trees, about 3-12 m. high; flowers 20-30 mm. long; fruit 8-20 mm. in diameter (not known in *S. conzattii*). Calyx about 6 mm. long, subtruncate; corolla with keel petals separate (Oaxaca) 4. *S. conzattii*
- Calyx 10-15 mm. long, subtruncate to lobed; corolla with keel petals joined.
Fruit (10-) 15-20 mm. in diameter; calyx 10-15 mm. long with lobes 3-5 mm. long (Coahuila; Nuevo León; Tamaulipas; Zacatecas; San Luis Potosí) 5. *S. secundiflora*
- Fruit 8-10 mm. in diameter; calyx 10 mm. long with teeth 1 mm. long or less.
Flowers about 20 mm. long; calyx with teeth about 1 mm. long (Coahuila; Zacatecas) 2. *S. purpusii*
- Flowers about 25 mm. long; calyx subtruncate (Clarion Isl., Baja California, Tamaulipas; Yucatan; Quintana Roo, Cozumel Isl.) 3. *S. tomentosa*

A cultivated species, *Sophora japonica* L., has not been included in the key.

1. ***Sophora nuttalliana*** Turner, Field and Lab. 24: 15. 1956, nom. nov. for *S. sericea* Nutt. Figure 3
- Sophora sericea* Nutt. Gen. Pl. 1: 280. 1818, non Andrews 1806.
TYPE: *T. Nuttall s.n.*, South Dakota.
- Patrinia sericea* (Nutt.) Raf. Journ. Phys. Chim. Hist. Nat. 89: 97. 1819.
- Pseudosophora sericea* (Nutt.) Sweet, Hort. Brit. ed. 2. 122. 1830.
- Vexibia sericea* (Nutt.) Raf. Atl. Journ. 144. 1832.
- Vibexia sericea* (Nutt.) Raf. ex Jacks. Ind. Kew. 2: 1193. 1895, error for *Vexibia sericea*.

Herb, perennial from woody root, commonly 10-30 cm. high; stems pubescent with white, subappressed, antrorse hairs; stipules deltoid, sericeous, 1-5 mm. long, 0.2-2 mm. broad at the base, caducous; leaves 7-25-foliolate, the axis about 3-8 cm. long, white sericeous, the lateral leaflets alternate to subopposite, the blades elliptic or ovate, 3-15 mm. long, 2-10 mm. broad, the apex obtuse, sometimes emarginate, the base obtuse to cuneate, the upper surface essentially glabrous, the lower surface sericeous, the secondary venation not evident; bracts

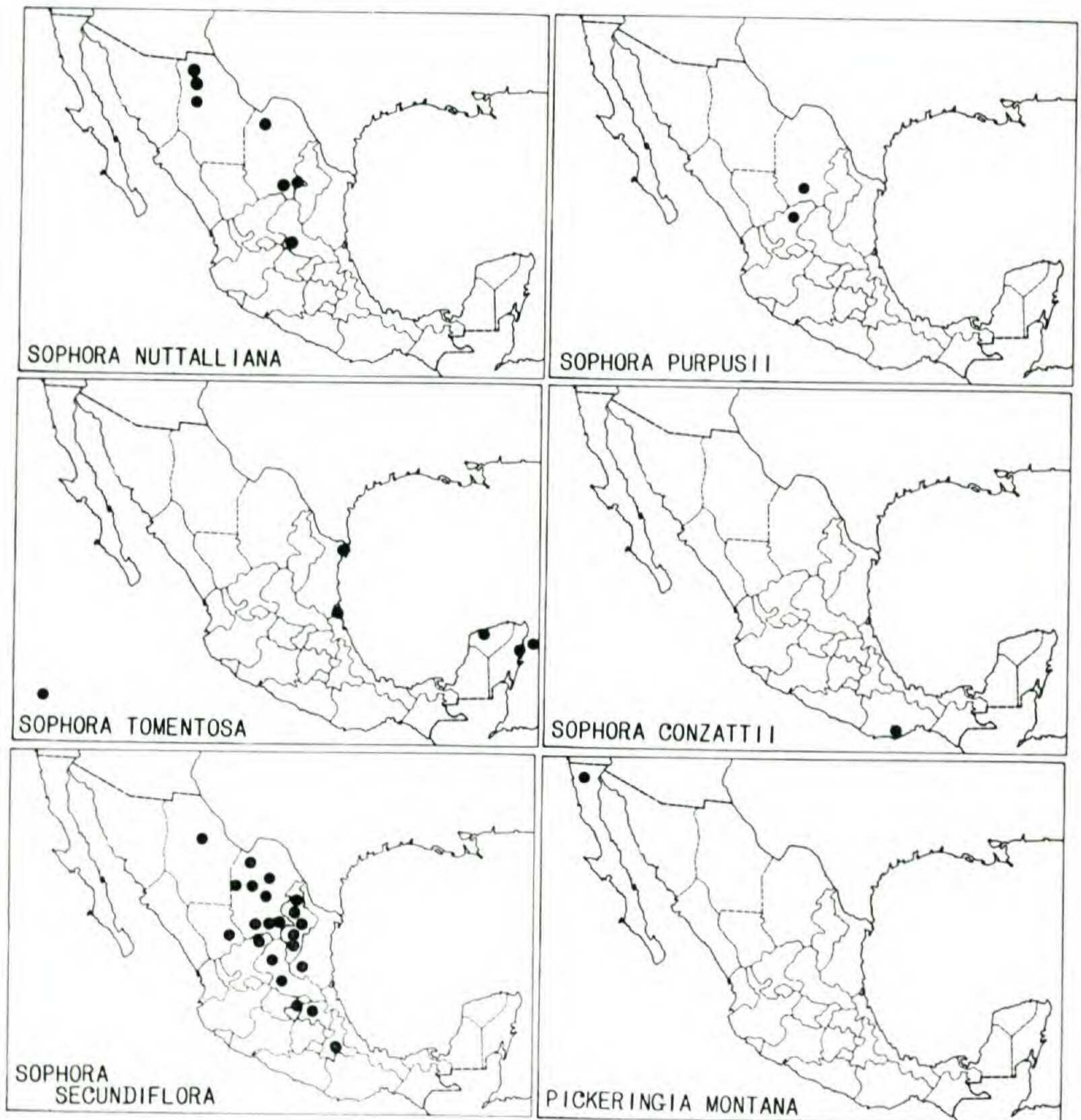


Fig. 3. Geographic distribution of *Sophora* and *Pickeringia* in Mexico.

at base of pedicels linear-deltoid, sericeous, 3-5 mm. long; bracteoles apparently lacking; flowers about 15-20 mm. long; calyx subsericeous, sometimes purplish, somewhat gibbous, 6-9 mm. long, the tube 4-7 mm. long, the teeth deltoid, about 2 mm. long; corolla whitish, the standard reflexed, about one fourth longer than the wings and keel, the keel petals united toward the apex; fruit coriaceous, stramineous, sericeous, glabrescent, terete, torulose, 1-6-seeded, about 2-5 cm. long, 5 mm. in diameter at the seeds, the apex usually attenuate; seeds sublustrous, yellowish to light brown with a darker line along the chalazal side, ellipsoid, about 5 mm. long and 3 mm. in diameter, the hilum lateral, subapical, orbicular, about 0.2 mm. in diameter.

Distribution: Prairie and rocky hillsides up to about 3000 m. elevation, South Dakota and Wyoming to Arizona and northern Mexico.

MEXICO: COAHUILA: Lirios, *Palmer 264* in 1880 (GH, NY, US). Rancho Los Angeles, about 40 km. SW. of Saltillo, *Gould & Watson 10503* (MICH).

COAHUILA ? : Las Vegas, *Arsène 18963* (F), *18526* (F).

CHIHUAHUA: Madera, *Palmer 266* in 1908 (F, GH, NY, US). Rio Grande Valley, *Pringle 5366* (MEXU, US), *s.n.*, June 16, 1885 (GH). Paseo del Norte, *Pringle 107* (GH), *5233* (MEXU, US). San Ysidro, SW. of Barranca, *Mexia 2526* (BM, CAS, GH, MICH, POM, NY, UC, US). Janos to Guadeloupe Cañon, *E. K. Smith s.n.* (NY). Below high ridge crests at NW. end of Sierro del Diablo, *Stewart 998* (GH).

SAN LUIS POTOSÍ: San Luis Potosí, *Parry & Palmer 199* (BM, GH, NY, US).

Local names: Frijolillo (México); white loco, silky sophora (United States).

2. *Sophora purpusii* Brandeg. *Zoe 5*: 235. 1906. TYPE: *C. A. Purpus 1076*. México. Figure 3

Shrub; stipules deltoid, sericeous, 1-2 mm. long, caducous; leaves 13-19-foliolate, the axis about 3-5 cm. long, white-velutinous, the lateral leaflets essentially opposite, the blades coriaceous, orbiculate, oblong, or obovate, about 5-8 mm. long, 3-5 mm. broad, the apex obtuse or emarginate, the base rounded, the upper surface moderately appressed-pubescent, glabrescent, nitid, the lower surface sericeous, the secondary veins not evident; bracts at base of pedicels, deltoid, 1-2 mm. long; paired bracteoles subtending the calyx, minute, pubescent; flowers about 20 mm. long; calyx subsericeous, 10 mm. long, the teeth deltoid, about 1 mm. long, the tube about 9 mm. long; corolla white with purplish markings, the standard a little longer than the wings and keel; fruit coriaceous, sericeous, glabrescent, compressed, somewhat torulose, 1-6-seeded, about 4-6 cm. long, 8-10 mm. broad at the seeds, the apex acute; seeds not seen.

Distribution: Known only from Coahuila and Zacatecas, México.

MEXICO: COAHUILA: Sierra de Parrás, *Purpus 1076* (F, GH, NY, POM, UC TYPE, US). Dry valley east of Parrás, *without collector's name*, April 11/47 (GH).

ZACATECAS: North of San Lucas, *Lloyd 29* (K, UC, US). Cedros, *Lloyd 141* (GH).

Local name: Frijolillo.

3. *Sophora tomentosa* L. Sp. Pl. 373. 1753, non Hort. ex Dippel. 1893. TYPE: *P. Hermann s.n.* Ceylon. Figure 3
Sophora occidentalis L. Syst. ed. 10, 1015. 1759. TYPE: *P. Browne s.n.* Jamaica.
Sophora havanensis Jacq. Enum. Pl. Carib. 20. 1760. TYPE: *N.J. Jacquin s.n.* Cuba.
Sophora littoralis Schrad. in Goett. Gel. Anz. 1: 709. 1821. TYPE: *M. Wied-Neuwied s.n.* Brazil.
Sophora arenicola Nees, Flora 4: 297. 1821. TYPE: *M. Wied-Neuwied s.n.* Brazil.
Zanthyrasis paniculata Raf. New Fl. 3: 84. 1838. TYPE: *Z. Collins s.n.* Florida or Cuba.
Sophora tomentosa L. β *truncata* Torr. & Gray, Fl. N. Am. 1: 389. 1840. TYPE: "Dr. Hulse, Dr. Leavenworth." Florida.
Sophora tomentosa L. β var. *littoralis* (Schrad.) Benth. in Mart. Fl. Bras. 15(1): 330, t. 124. 1862.

Shrub, to about 3 m. high; stipules linear-deltoid, tomentulose, about 3 mm. long, caducous; leaves 13-21-foliolate, the axis about 12-25 cm. long, puberulent, the lateral leaflets opposite or subopposite, the blades oblong, orbicular, ovate, or obovate, commonly suborbicular, about 2-6 cm. long, 1-4 cm. broad, the apex obtuse, cuneate, or subcordate, the upper surface sericeous to glabrous, sometimes nitid, the lower surface sericeous or puberulent, the secondary venation inconspicuous; bracts linear, 3-5 mm. long; bracteoles apparently lacking; flowers about 25 mm. long; calyx pallid-sericeous, about 10 mm. long, subtruncate; petals white to yellow, the standard a little longer than the other petals; fruit subcoriaceous, cinereo-tomentulose, terete, torulose or moniliform, 1-15-seeded, 5-15 cm. long and about 8 mm. in diameter at the seeds; seeds sublustrous, light-brownish, spherical or subellipsoid, 5-8 mm. long, 5-6 mm. in diameter.

Distribution: Pantropical, usually near the sea, frequently on [restricted to ?] limestone.

MEXICO: Without exact locality, *Sessé & Mociño 1072* (F); "Mex. boundary," *Schott s.n.* (F).

BAJA CALIFORNIA: Clarion Isl., *Anthony 404* (DS, GH, US); *Barkelew 246* (GH, UC); *Barclay s.n.* (K); *Solis 6* (US), *3602* (MEXU); *Mason 1562* (CAS, GH, K, US); *Townsend s.n.* in 1889 (US); *Elmore B4* (DS,

F, GH, NY, UC, US); *Howell 8374* (CAS, DS, GH, K, NY, POM, UC, US); *Craig 583* (POM); *Carlquist 393* (RSA); *Cárdenas s.n.* (ENCB).

TAMAULIPAS: Washington Beach, *Runyon 473* (NY, US). Coastal dunes near Rio Grande, *LeSueur 206* (F, GH). Brasos Santiago, *Schott 289a* (NY). Barra de Tampico, *Maury 6489* (MEXU).

YUCATAN: Chuburná, *Enríquez 683* (MEXU, US).

QUINTANA ROO: Tanchah, *Steere 2512* (F, MICH). Cozumel Isl., San Miguel, *Steere 2955* (F); *Rudd 2035* (US).

Local name: Xoxoak (Mexico); tambalisa (Cuba).

This species was reported from Socorro Isl. (*Barkelew 246*) but the collection probably was made on Clarion Isl. according to I. M. Johnston (Proc. Calif. Acad. Sci. ser. 4, 20: 14, 64. 1931).

4. *Sophora conzattii* Standl. Contrib. U.S. Nat. Herb. 23: 436. 1922.

TYPE: *C. Conzatti, B. P. Reko, & E. Makrinius 3171*. México.

Figure 3

Tree; stipules not seen; leaves 7-9-foliolate, the axis 9.5-13 cm. long, puberulent, glabrate, the lateral leaflets essentially opposite, the blades coriaceous, ovate or elliptic-ovate, 3.5-5.5 cm. long, 2.2-3.5 cm. broad, the apex obtuse or subacute, the base obtuse, the surfaces glabrous, the secondary venation reticulate, fairly prominent; inflorescences axillary; bracts deltoid, about 1 mm. long, caducous; bracteoles minute, caducous; flowers 20-25 mm. long; calyx ferruginosericeous, subtruncate, about 6 mm. long; petals violet, separate, the standard reflexed, a little longer than the wings and keel petals; ovary pallid-sericeous, the style pubescent toward the base, glabrous toward the apex; fruit and seed not known.

Distribution: Known only from the type.

MEXICO: OAXACA: "Cerro Espina," Pochutla, at 1200 m. elevation, *Conzatti, Reko & Makrinius 3171* (US).

Local name: Frijolillo.

I am not fully convinced that this species is a *Sophora* out until a fruiting specimen can be examined I have no other suggestion. The leaflets closely resemble those of *Sweetia panamensis*. The flowers with separate petals

resemble those of *Ormosia* but lack the characteristic bilobed stigma of that genus.

5. *Sophora secundiflora* (Gómez-Ortega) Lag. in DC. Cat. Hort. Monsp. 148. 1813. Figure 3
Broussonetia secundiflora Gómez-Ortega, Hort. Matr. Dec. 61, pl. 7. 1798. LECTOTYPE: *M. Lagasca s.n.* Cultivated Botanical Garden, Madrid, ex Mexico ("è seminibus missis per D. sessé") (Designated by R. McVaugh in herb. G-DC).
Virgilia secundiflora (Gómez-Ortega) Cav. Ic. 5: 1, pl. 401. 1799.
Calia erythrosperma Berlandier in Mier-Terán, Mem. Comisión Limites 13. 1832. TYPE: *J. L. Berlandier s.n.* (?). Texas and México.
Agastianis secundiflora (Gómez-Ortega) Raf. New Fl. 3: 86. 1838.
Dermatophyllum speciosum Scheele, Linnaea 21: 459. 1848. TYPE: *R. Römer s.n.* Texas.
Sophora speciosa (Scheele) Benth. in A. Gray, Boston Journ. Nat. Hist. 6: 178. 1850, non Torr. 1856.
Sophora sempervirens Engelm. in A. Gray, Boston Journ. Nat. Hist. 6: 178. 1850, nomen in synonym.
Cladrastis secundiflora (Gómez-Ortega) Raf. ex Jacks. Index Kew. 1: 552. 1893.
Sophora secundiflora f. *xanthosperma* Rehd. Journ. Arn. Arb. 10: 134. 1929. TYPE: *L. W. Nuttall s.n.* Texas.

Shrub or small tree, to about 12 m. high; stipules minute or lacking; leaves 7-11-foliolate, the axis about 6-15 cm. long, sericeous, glabrescent, the lateral leaflets subopposite or alternate, the blades coriaceous, obovate to oblong, about 2-9 cm. long, 0.7-3.5 cm. broad, the apex obtuse, sometimes emarginate, the base obtuse or cuneate, the surfaces sericeous, often glabrate by maturity, the secondary venation reticulate, fairly prominent; bracts and bracteoles linear, the bracts to about 6 mm. long, the bracteoles shorter; flowers 20-30 mm. long, fragrant; calyx pallid-sericeous, 10-15 mm. long, the lobes deltoid, 3-5 mm. long, the tube hypanthoid, 7-10 mm. long; petals blue to violet-blue, the standard about one-third longer than the other petals; fruit coriaceous, sericeous, sometimes glabrescent, terete, usually torulose, 1-6-seeded, about 3-13 cm. long, (1-) 1.5-2 cm. in diameter at the seeds, the apex usually acuminate; seeds red (or yellow in f. *xanthosperma*), sublustrous, subellipsoid, about 10-17 mm. long, 10-15 mm. in diameter, the hilum orbicular to oblong, 2-4 mm. long and 1.5-2 mm. wide.

Distribution: Texas and New Mexico southward to Central Mexico.

MEXICO: CHIHUAHUA: Mouth of canyon 8 km. NW. of Cañon del Rayo, *Stewart 985* (GH).

COAHUILA: San Lorenzo Canyon, Saltillo, *Palmer 539* in 1905 (F, NY, UC, US). Chojo Grande, SE. of Saltillo, *Palmer 539* in 1905 (GH), 721 in 1905 (A, F, GH, NY, UC, US). Sa. [de la] Paila, General Cepeda, *Hinton 16597* (NY, US). "De la Paila," *Rozynski 301* (NY). Sierra Pata Galana, *Purpus 1843* (BM, F, GH, UC, US). "S. Anahuac, Sta. Catarina," *Hinton 16933* (GH). Sierra Encarnación, *Nelson 3899* (NY, US). Sierra Mojada Mts., *Jones 169* (POM, US), s.n. (DS). San Lázaro, *Wynd & Mueller 136* (A, K, NY, US); *Mueller 3100* (GH, UC). "Cañon Espantosa," *Schroeder 49* (GH). Monclova, Sierra de Gloria, *Marsh 2003* (F, GH). Muzquiz, Sorpresa Spring, *Marsh 348* (F, GH, MEXU). La Esmeralda, *Juzepczuk 671* (F). San Antonio de los Alamos, *Johnston & Muller 938* (GH). Aguaje del Pajarito, N. of Puerto Colorado, *Johnston 8688* (GH). 4 km. W. de El Misterio, *Mendiola s.n.* (ENCB). Sierra de la Madera, "La Cueva," Charretara Canyon, *Johnston 9115* (GH, MEXU). Canyon del Rayo, Sierra del Diablo, *Stewart 985* (GH). Cañon de Hidalgo, Sierra Mojada, *Stewart 1053* (GH). W. slopes of Sierra del Carmen, *Stewart 1689* (GH). Parrás, *Palmer 2133* in 1880 (K); *Aguirre 366* (MEXU).

NUEVO LEON: "New Leon," *Mexican Boundary Survey, Thurber s.n.* (F). Monterey, *Palmer 265* in 1880 (A, GH, K, NY, US); *Pringle 3071* [3011?] (A, ENCB, GH, MEXU), 10154 (BM, F, GH, K, MEXU, NY, UC, US); *Johnson & Barkley 16230 M* (F, GH); *Arsène [Bro. Abbon 245] 6175* (A, US); *Mueller & Mueller 504* (MEXU); *White 1492* (GH); *Kenoyer 1105* (F). "Mts. 15 mi. W. of Icamole," *Safford 1265* (A, US). Between Cienequillas and Pablillo, *Mueller & Mueller 888* (A, F), 3602 (MEXU). Cerro Potosí, Galeana, *Schneider 1083* (F); *Edwards 46* (DS), 76 (F); *Mueller & Mueller 518* (A). Near Doctor Arroyo, *Shreve & Tinkham 9387* (GH). Lampazos, *Edwards 310* (RSA), 414A (F). Chipinque, Sn. Pedro Garza García, *Marroquin 696* (ENCB).

TAMAULIPAS: Between Victoria and Jaumave Valley, *Nelson 4443* (F, GH, US); *Rozynski 701* (F, NY). La Sardiña, *Bartlett 10957* (F, US). Cerro de los Armadillos, San José, *Bartlett 10388* (A, DS, GH). Sierra de San Lucas, *Rozynski 658* (CAS, F, K, NY, US). 9 mi. W. of Palmillas on road to Tula, *M. Johnston 5386* (MEXU).

DURANGO: Peñón de Covadonga, cerca de Yerbanís, Peñón Blanco, *Parey 3125* (ENCB).

ZACATECAS: Concepción del Oro, *Palmer 269* in 1904 (F, GH, K, NY, US); *Shreve 9369* (GH).

SAN LUIS POTOSÍ: San Luis Potosí, *Parry & Palmer 200* in 1878 (BM, F, GH, K, MICH, NY, US). Minas de San Rafael, *Purpus 5186* (BM, F, GH, MEXU, NY, UC, US). Charcas, *Lundell 5156* (A, F, MICH, UC). Amoles, *Graber 222* (US). Cedral, *Juzepczuk 413* (F). Mineral de Guadalcázar, *Villada 17* (MEXU). "Mt. Mitras," *Roybal 18* (UC). 10 km. W. of Guadalcázar, *Rzedowski 4924* (ENCB). Cañon E. of

Laguna Seca, Soledad, *Rzedowski 4234* (ENCB). Between Charco Blanco and Aguaje de Garcías, Guadalupe, *Medellín 1561* (ENCB). 3 km. E. of Mineral de Catorce, *Rzedowski 7263* (ENCB, MICH). 3 km. E. of Corazones, Villa Hidalgo, *Rzedowski 8083* (ENCB, MICH).

QUERETERO: Pilon, *McVaugh 10362* (MEXU, MICH, US).

HIDALGO: Cardonal, *Ehrenberg s.n.* (US); *Moore 2166* (GH, UC). 4 km. NW. of Cardonal (El Mayorazgo), *González-Quintero 2514* (ENCB). Between Actopán and Ixmiquilpan, *Miranda 8996* (MEXU). Sierra de la Mesa, *Rose, Painter, & Rose 9094* (US). Km. 145, carretera México-Laredo, *Takaki s.n.* (ENCB). Cardonal, 18 km. NW. of Ixmiquilpan, *González-Quintero 2370* (ENCB). 3 km. S. of Santuario, Cardonal, *González-Quintero 2095* (ENCB).

Puebla: "Cerro de Matzize, near Oaxaca," *Purpus s.n.* (UC).

Local names: Colorín, chilicote, patiol, patol, frijolillo (Mexico); Texas mountain laurel, coral bean, mescal bean (United States).

The yellow-seeded form cited above is known from Texas and may or may not occur in Mexico.

In addition to the five species of *Sophora* native to Mexico, the Japanese Pagoda Tree, or Chinese Scholar Tree, *S. japonica* L. (*Styphnolobium japonicum* (L.) Schott) has been introduced in the valley of México. There are a number of trees in Chapultepec Park, in Mexico City, and a specimen, *Matuda* (no. 21189) was collected "en ladera seca, Bosque de los pinos. Ajpsco, D. F." The trees of this species are fairly tall, to about 20 meters high, deciduous, with yellowish-white flowers about 10-15 mm. long, and glabrous, moniliform pods.

Three species of *Sophora* occurring in border states, *S. affinis* Torrey & Gray in Texas, *S. arizonica* S. Wats. and *S. formosa* Kearney & Peebles in Arizona, are as yet unknown in Mexico.

Tribe 2. PODALYRIEAE

Podalyrieae Benth. Enum. Pl. Hugel 27. 1839; Benth. & Hook. Gen. Pl. 1: 437. 1865. TYPE: *Podalyria* Lam.

Shrubs or perennial herbs; leaves commonly digitately 3-foliolate, sometimes pinnate, sometimes simple, 1-foliolate, or multifoliolate; stipules present or absent; inflorescences terminal or axillary, usually racemose, or the flowers sometimes solitary; corolla papilionaceous; petals free or the keel petals joined; calyx campanulate with 5 subequal lobes or teeth, the vexillar lobes sometimes connate, valvate or imbricate in bud; stamens 10, the filaments separate to the base, equal or alternately subequal in length, the anthers usually uniform, ellipsoid, dorsified; ovary 1-many-ovulate, the style glabrous or with a ring or hairs below the stigma; fruit 2-valved, commonly dehiscent; seed reniform or subreniform, the hilum lateral, subapical, sometimes carunculate.

Only *Pickeringia*, *Thermopsis*, and *Baptisia* are native to America. Only *Pickeringia* crosses the line into Mexico, in northern Baja California. *Thermopsis* is found in the United States south to the border states, Texas to California, and *Baptisia* occurs in Texas, but neither genus is known from Mexico.

8. *Pickeringia* Nuttall ex Torrey & Gray, Fl. N. Am. 1: 388. 1840, nom. cons., non Nuttall 1834. TYPE: *P. montana* Nutt. in Torrey & Gray, California.
Xylothermia Greene, Pittonia 2: 188. 1891, nom. nov. for *Pickeringia* Nutt. 1840.
Prickothamnus Nutt. ex Taubert in Engler & Prantl, Natürl. Pflanzenfam. 3, Abt. 3: 203. 1892, nomen in synonym.

The genus is monotypic; hence, the description is that of the species.

1. *Pickeringia montana* Nutt. in Torrey & Gray, Fl. N. Am. 1: 389. 1840. TYPE: *T. Nuttall s.n.*, "summits of mountains near Santa Barbara," California. Figure 3
Xylothermia montana (Nutt.) Greene, Pittonia 2: 188. 1891.
Xylothermia montana subsp. *tomentosa* Abrams, Bull. Torrey Bot. Club 34: 263. 1907. TYPE: *L. Abrams 3530*, "near El Nido, San Diego County," California.
Pickeringia montana var. *tomentosa* (Abrams) I. Johnst., Contrib. Gray Herb. n.s. 68: 84. 1923.

Shrub, to about 2 m. tall, erect or semiprostrate, with spinose branches; stipules not seen, apparently lacking; leaves alternate, digitately 3-foliolate or sometimes unifoliolate, essentially sessile, the

leaflets coriaceous, elliptic to obovate, 5-20 mm. long, 3-10 mm. broad, entire, the apex acute or obtuse, the base cuneate, the upper surface glabrous, nitid or sparsely appressed-pubescent to sericeous or tomentulose, the lower surface lighter in color, glabrous to sericeous or tomentose, the secondary venation inconspicuous, the terminal, or middle, leaflet sometimes with a slightly longer petiolule and larger blade than the laterals; inflorescences subterminal ["flowers solitary in the axils of the leaves at the extremity of the branches" fide Nuttall], sometimes apparently terminal, racemose, the axes moderately pubescent to densely argenteo-tomentose or sericeous; bracts and bracteoles linear, acicular, 2-4 mm. long; flowers 10-20 mm. long; calyx campanulate, valvate in bud, sparsely appressed-pubescent to tomentulose, 5-7 mm. long, the teeth deltoid, 1 mm. long or less; petals free, reddish-purple or, rarely, whitish; stamens alternately subequal in length, about 10-15 mm. long, the anthers ellipsoidal, about 1 mm. long; ovary pallid-tomentose, commonly 6-10-ovulate, the style glabrous, the stigma terminal, minutely capitate-penicillate; fruit dehiscent, coriaceous, light brown, puberulent, linear, compressed, 1-10-seeded, about 2-5 cm. long, 4-5 mm. broad, and 2 mm. thick; seeds reniform, sublustrous, brownish-black, 3-4 mm. long, 2 mm. broad, and 1 mm. thick, the hilum minute, subapical.

Distribution: In chaparral, north central California to northern Baja California.

MEXICO: BAJA CALIFORNIA NORTE: Descanso Valley, *Moran 8427* (SD, US).

Local names: Chaparral pea, pea chaparral, stingaree bush (California).

The vesture of the plants is so variable and with so much intergradation it does not seem desirable to recognize a tomentose variety unless other degrees of pubescence are given equal consideration. The vegetative parts of the one collection thus far known from México are silvery sericeous.

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